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Gazetteer of Hydrologic Characteristics of Streams in Massachusetts--Coastal River Basins of the North Shore and Massachusetts Bay

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Prepared in cooperation with the
COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
DIVISION OF WATER POLLUTION CONTROL

GAZETTEER OF HYDROLOGIC CHARACTERISTICS OF STREAMS IN MASSACHUSETTS--COASTAL RIVER BASINS OF THE NORTH SHORE AND MASSACHUSETTS BAY

By S. William Wandle, Jr.

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 84-4281

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DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING

DIVISION OF WATER POLLUTION CONTROL

Boston, Massachusetts

1984

UNITED STATES DEPARTMENT OF THE INTERIOR

WILLIAM P. CLARK, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

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CONVERSION FACTORS

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI Units
	Length	
inch (in)	25.4*	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
	Area	
square mile (mi^2)	2.590	square kilometer (km^2)
	Flow	
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
cubic foot per second per square mile [$(ft^3/s)/mi^2$]	0.01093	cubic meter per second per square kilometer [$(m^3/s)/km^2$]
	Slope	
foot per mile (ft/mi)	0.1894	meter per kilometer (m/km)

Temperature

Temperature in degrees Fahrenheit (°F) can be converted to degrees Celsius (°C) as follows:

$$°C = 5/9 (°F-32).$$

*Exact.

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GAZETTEER OF HYDROLOGIC CHARACTERISTICS OF STREAMS IN MASSACHUSETTS--COASTAL RIVER BASINS OF THE NORTH SHORE AND MASSACHUSETTS BAY

By S. William Wandle, Jr.

ABSTRACT

The coastal river basins of the North Shore and Massachusetts Bay include streams draining the Parker River (60.4 square miles), Rowley River (9.9 square miles), Ipswich River (156 square miles), Mystic River (66.0 square miles), Charles River (311 square miles), Neponset River (117 square miles), Weymouth Fore and Weymouth Back Rivers (about 63 square miles) and Weir River (about 20 square miles) basins. The study area in eastern and northeastern Massachusetts also includes the minor river basins draining into Massachusetts Bay, Ipswich Bay, or the Atlantic Ocean. Drainage areas, using the latest available 1:24,000 scale topographic maps, were computed for the first time for ungaged streams draining more than 3 square miles, and were re-computed for data-collection sites.

Streamflow characteristics at 15 gaging stations were calculated using a new data base with daily flow records through 1981. These characteristics include annual and monthly flow statistics, duration of daily flow values, and the annual 7-day mean low flow at the 2-year and 10-year recurrence intervals. Seven-day low-flow statistics are presented for 95 partial-record sites and the procedures used to determine the hydrologic characteristics of a basin are summarized. Basin characteristics representing 14 commonly used indices to estimate various streamflows are presented for 11 gaged streams. This gazetteer will aid in the planning and siting of water-resources related activities, and will provide a common data base for governmental agencies and the engineering and planning communities.

INTRODUCTION

Information on hydrologic characteristics, including drainage areas, frequency of low flows, and duration of daily flows, is necessary to plan and manage water-resources related activities. Governmental agencies and the engineering and planning community need streamflow and basin characteristics to satisfy requirements relative to waste assimilation, fisheries management, hydropower, land-use planning, stream-systems analysis, and water-resource development and management. No current hydrologic data base containing a comprehensive list of drainage areas, monthly flows, low-flow frequencies, and duration of daily flows is available for most of the Massachusetts stream systems. Drainage areas are available for selected sites where streamflow data are collected. Streamflow characteristics are presented in various reports, but these data, to be current, need to be re-analyzed using the latest available daily flow records.

In response to this need, a study was begun in 1980, in cooperation with the Massachusetts Division of Water Pollution Control, to analyze available streamflow and river-basin characteristics, and to compute subbasin drainage areas. This report is a part of a series of gazetteers on the hydrologic characteristics of the major river basins in the State. Gazetteers are also available for the Connecticut River basin (Wandle, 1984a), Hudson River basin (Wandle, 1984b), Merrimack River basin (Wandle and Fontaine, 1984), Taunton and Ten Mile River basins (Wandle

and Keezer, 1984), Thames River basin (Wandle and LeBlanc, 1984), Housatonic River basin (Wandle and Lippert, 1984), Blackstone River basin (Wandle and Phipps, 1984), and coastal river basins of the South Shore and Buzzards Bay (Wandle and Morgan, 1984). This report provides the first detailed listing of drainage areas and streamflow characteristics derived from daily flow records of coastal river basins of the North Shore and Massachusetts Bay. The streamflow characteristics presented are an expansion and an update of those given in Brackley and others (1973), Delaney and Gay (1980), Sammel (1967), Sammel and others (1964, 1966), and Walker and others (1975).

The coastal river basins of the North Shore and Massachusetts Bay (fig. 1) include the Parker, Ipswich, Mystic, Charles, Neponset, and Weymouth River basins, and the minor river basins draining into either the Atlantic Ocean, Ipswich Bay, or Massachusetts Bay in northeastern Massachusetts. The study area includes all or part of the following communities: Amesbury, Andover, Arlington, Ashland, Bellingham, Belmont, Beverly, Billerica, Boston, Boxford, Braintree, Brockton, Brookline, Burlington, Cambridge, Canton, Chelsea, Cohasset, Danvers, Dedham, Dover, Essex, Everett, Foxboro, Franklin, Georgetown, Gloucester, Groveland, Hamilton, Hingham, Holbrook, Holliston, Hopedale, Hopkinton, Ipswich, Lexington, Lincoln, Lynn, Lynnfield, Malden, Manchester, Marblehead, Middleton, Medfield, Medford, Medway, Melrose, Mendon, Millis, Milton, Nahant, Natick, Needham, Newbury, Newburyport, Newton, Norfolk, North Andover, North Reading, Norwell, Norwood, Peabody, Quincy, Randolph, Reading, Revere, Rockland, Rockport, Rowley, Salem, Saugus, Sharon, Sherborn, Somerville, Stoneham, Stoughton, Swampscott, Tewksbury, Topsfield, Wakefield, Walpole, Waltham, Watertown, Wayland, Wellesley, Wenham, West Newbury, Weston, Westwood, Weymouth, Wilmington, Winchester, Winthrop, Woburn, and Wrentham.

Streamflow characteristics presented for the 15 continuously gaged streams are based upon a new sample of daily flow records in comparison to flow records used in the publications cited earlier and in Higgins (1967), Knox and Soule (1949), and Male and Ogawa (1982). Streamflow records through the 1981 water year were available for this analysis. Records were selected for each site to represent a flow regime influenced by fairly constant river basin conditions (Wandle, 1983).

Drainage areas were computed for the first time for ungaged streams draining greater than 3 mi^2 and were re-computed for data-collection sites. Drainage divides, as delineated on the latest available 1:24,000 scale topographic quadrangle maps (Brackley and Wandle, 1982, 1983; Krejmas, 1982; Wandle and Frimpter, 1982) were used to calculate drainage areas. Drainage areas for most of the long-term gaging stations in earlier reports were computed using the drainage divides as outlined on 1:31,680 or 1:62,500 scale topographic quadrangle maps.

Streamflow data used in this study are a part of the historic streamflow data collected under agreements with State and Federal agencies and the U.S. Geological Survey. Most of the low-flow discharge measurements used in determining low-flow estimates at partial-record sites were collected during the water-resources investigations of the coastal drainage basins of northeastern Massachusetts basins (Delaney and Gay, 1980), Charles River basin (Walker and others, 1975), Neponset River basin (Brackley and others, 1973), and coastal drainage basins of southeastern Massachusetts (Williams and Tasker, 1974). The file of basin characteristics was created during an evaluation of available streamflow data in central New England (Johnson, 1970). This file is an expansion of the characteristics abstracted by Langbein and others (1947), and by Benson (1962). Basin characteristics were updated and additional characteristics were entered as part of a study to define floodflow characteristics of small streams (Johnson and Tasker, 1974; Wandle, 1982). The hierarchical stream list was compiled by the Massachusetts Division of Water Pollution Control and the Massachusetts Division of Fisheries and Wildlife (Halliwell and others, 1982).

Data tabulated include drainage areas, basin and streamflow characteristics for gaging stations, including annual and monthly flow statistics, duration of daily flow values, and the annual 7-day mean low flow at the 2-year and 10-year recurrence intervals. Seven-day low-flow statistics for partial-record sites are also presented. An explanation of each procedure to determine the streamflow and basin characteristics is provided.

The author thanks the many persons who have kindly given time, information, and guidance during this study. Particular thanks are given to persons in the Geological Survey who assisted in the data collection and in the preparation of this report.

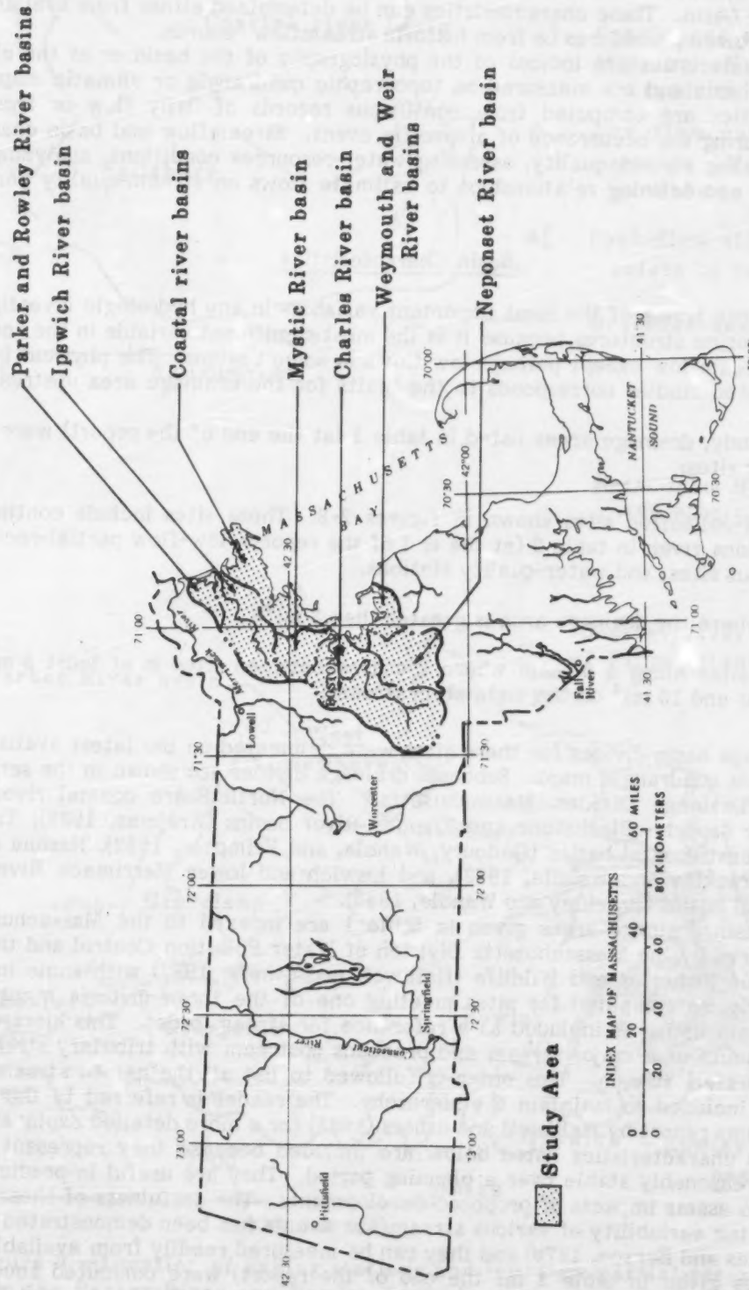


Figure 1.--Location of the coastal river basins of the North Shore and Massachusetts Bay

HYDROLOGIC DATA

Hydrologic characteristics are represented by various physical, climatic, and streamflow indices of a river basin. These characteristics can be determined either from available maps by following standardized procedures or from historic streamflow records.

Basin characteristics are indices of the physiography of the basin or of the climate prevailing over the basin and are measured on topographic quadrangle or climatic maps. Streamflow characteristics are computed from continuous records of daily flow or from a set of measurements during the occurrence of a specific event. Streamflow and basin characteristics are used in modeling stream quality, assessing water-resources conditions, analyzing impact of man's activities, and defining relationships to estimate flows on stream-quality parameters at ungaged sites.

Basin Characteristics

Drainage area is one of the most important variables in any hydrologic investigation or in the design of riverine structures because it is the most significant variable in the northeast that influences all streamflow except perhaps low flows in some regions. The physical boundary for many water-related studies corresponds to the limits for the drainage area upstream from the site.

For this study, drainage areas listed in table 1 (at the end of the report) were determined for the following sites:

1. Survey data-collection sites shown in figures 2-8. These sites include continuous-record gaging stations given in table 2 (at the end of the report), low-flow partial-record stations, miscellaneous sites, and water-quality stations.

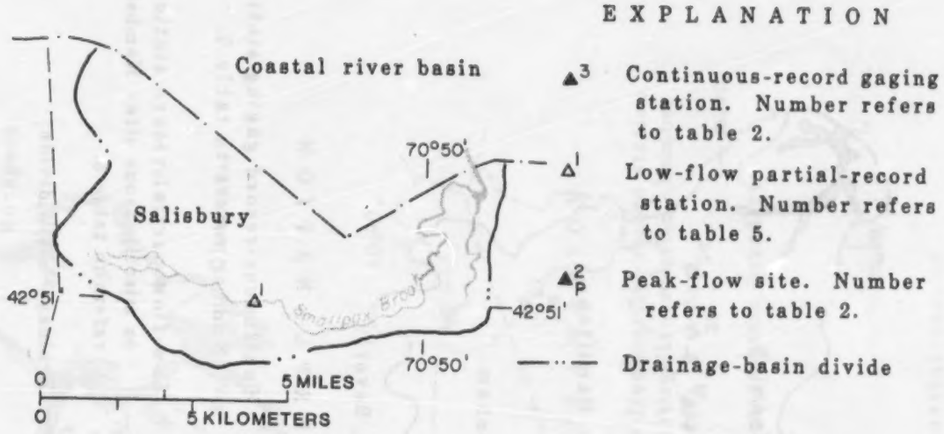
2. Locations where the drainage area is greater than 3 mi^2.

3. Successive sites along a stream where the area between sites is at least 6 mi^2 on tributary streams and 10 mi^2 on the main-stem stream.

The drainage basin divides for these sites were delineated on the latest available 1:24,000 scale topographic quadrangle maps. Subbasin drainage divides are shown in the series of statewide reports, "Drainage Divides, Massachusetts." The North Shore coastal river basins are covered by four reports—Blackstone and Thames River basins (Krejmas, 1982), Taunton River basin and southeast coastal basins (Gadoury, Wandle, and Frimpter, 1982), Nashua and Concord River basins (Brackley and Wandle, 1982), and Ipswich and lower Merrimack River basins and northeast coastal basins (Brackley and Wandle, 1983).

The subbasin drainage areas given in table 1 are indexed to the Massachusetts stream inventory prepared by the Massachusetts Division of Water Pollution Control and the Massachusetts Division of Fisheries and Wildlife (Halliwell and others, 1982) with some modifications. Drainage areas were computed for sites meeting one of the three criteria mentioned above. The entire stream listing is included as a reference for stream order. This hierarchical listing begins at the mouth of a major stream and proceeds upstream with tributary streams indented under the main-stem stream. This order is followed to list all the named streams. Unnamed tributaries are included to maintain the hierarchy. The reader is referred to the inventory of rivers and streams report by Halliwell and others (1982) for a more detailed explanation.

The basin characteristics listed below are included because they represent indices that would remain reasonably stable over a planning period. They are useful in predictive surface-water models to assess impacts of proposed developments. The usefulness of these characteristics to explain the variability of various streamflow events has been demonstrated in hydrologic analyses (Thomas and Benson, 1970) and they can be measured readily from available maps. The 14 basin indices given in table 3 (at the end of the report) were computed according to the procedures described below. The indices for elevation, storage, lake area, and forest can be computed by the grid method which is explained after all the procedures are described.



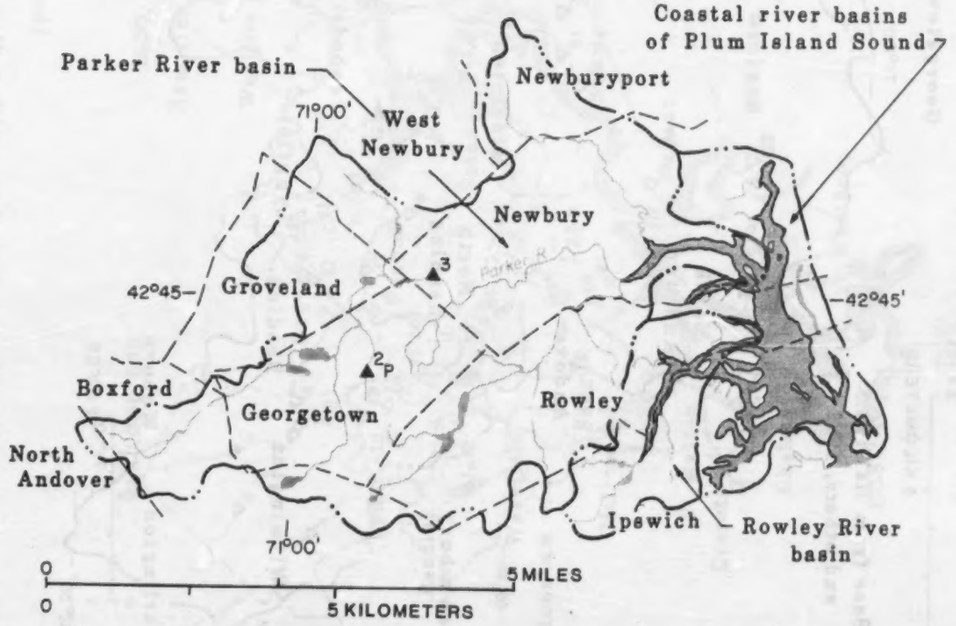


Figure 2.--Location of gaging stations and low-flow partial-record stations in the Parker River and Rowley River basins and coastal river basins

Figure 3.--Location of gaging stations and low-flow partial-record stations in the Ipswich River basin

Figure 5.--Location of gaging stations and low-flow partial-record stations in the Mystic River basin and coastal river basins

Figure 6.--Location of gaging stations and low-flow partial-record stations in the Charles River basin and coastal river basins

Figure 7.--Location of gaging stations and low-flow partial-record stations in the Neponset River basin

Figure 8.--Location of gaging stations and low-flow partial-record stations in the Weymouth Fore River, Weymouth Back River, and Weir River basins and coastal river basins

1. Drainage area—Area, in square miles, as measured on the most recent 1:24,000 scale topographic quadrangle maps. Drainage area, as defined in the "National Handbook of Recommended Methods for Water-Data Acquisition" (U.S. Geological Survey, 1977), is "...the area of a river basin, measured in a horizontal plane, that is enclosed by a topographic divide such that direct surface runoff from precipitation normally would drain by gravity into the river basin.". Drainage area boundary lines are traced on topographic maps along divides indicated by contour elevations, starting at the point on the stream for which the drainage area is desired. These lines are drawn to cross a contour at right angles. Interpolation between contours may be indicated by reference to trails, old roads, or firebreaks in forested areas, all of which frequently follow drainage divides. Detailed information may also be obtained from highway or street profiles, from examination of aerial photographs, and from ground reconnaissance. Subareas within each quadrangle map were computed with an electronic digitizer using the procedures of the U.S. Federal Inter-Agency River Basin Committee (1951) as a guide. The coefficients to compute square miles from digitizer units were calculated using the known area of each 7.5-minute quadrangle or of the appropriate 2.5-minute quadrilaterals. Drainage areas for the subbasins were computed by summing the contributing areas.
2. Slope—Main-channel slope, in feet per mile, determined from elevations at points 10 percent and 85 percent of the distance along the main channel from the gaging station to the basin divide.
3. Length—Main-channel length, in miles, from the gaging station to the basin divide, as measured with dividers set to 0.1 mile or with a map measurer.
4. Elevation—Mean basin elevation, in feet above sea level, measured on topographic maps by laying a grid over the map.
5. Storage—Area of lakes, ponds, and marshes, in percent of total drainage area, measured by planimetering or by using a transparent grid. The marsh area includes the area of wooded marshes and marshes as defined by the appropriate topographic quadrangle map symbol. Storage area is the total area of all the lakes, ponds, and marshes expressed as a percentage of the total drainage area.
6. Lake area—Area of lakes and ponds, in percent of the drainage area, determined by the grid method.
7. Forest—Area of forest, in percentage of the drainage area, determined from the forest cover as shown on the topographic map with the green woodland overprint using the grid method.
8. Soil—Soil index, in inches, represents the value of potential maximum infiltration, during an annual flood, under average soil-moisture conditions. This characteristic, provided by the U.S. Soil Conservation Service (Dr. Benjamin Isgur, written commun., 1970), is a function of the soil and cover conditions in the basin. The index was computed from the runoff curve number following procedures in U.S. Department of Agriculture (1972).
9. Latitude—Latitude of stream-gaging station, in decimal degrees, determined by manual measurement.
10. Longitude—Longitude of stream-gaging station, in decimal degrees, determined by manual measurement.
11. Precipitation—Mean-annual precipitation, in inches, determined from the isohyetal map in Knox and Nordenson (1955). The variation in mean-annual precipitation is shown in more detail in this map than in more recent sources.
12. Precipitation intensity—Maximum 24-hour rainfall, in inches, having a recurrence interval of 2 years. This characteristic was determined from U.S. Weather Bureau (1959b).
13. Snowfall—Average total seasonal snowfall, in inches, from an isohyetal map in Lautzenheiser (1969).
14. January temperature—Minimum January temperature, in degrees Fahrenheit, determined from U.S. Weather Bureau (1959a).

Several basin characteristics were measured following the grid method by using transparent grids to compute area or an average contour value. Storage area is determined by randomly placing the grid over the water and marsh area and counting squares. If the water and marsh area is large enough (about 30 squares), the number of grid intersections within the storage area are counted. The storage area then is computed as the product of the square size and the number of grid intersections. To measure a contour value such as elevation, the grid spacing is selected to give at least 25 intersections within the basin boundary. The elevation at each grid intersection is determined and an average is computed. The percentage of a variable that is extensive in a drainage basin, such as forest cover, can be easily measured by counting the number of grid intersections occurring over the forested area, multiplying by 100, and dividing by the number of grid intersections within the basin.

Streamflow Characteristics

Available historic daily flow records were used to compute daily, monthly, and annual flow characteristics. A summary of these records is given in table 2 and the location of streamflow sites is shown in figures 2-8. These flow data were collected as part of the Survey's nationwide data-collection network through agreements with State and Federal agencies. Records of daily flow are available from the Survey's National Water Data Storage and Retrieval System (WATSTORE). This water-data computer processing system consists of several files containing data grouped by common characteristic and data-collection frequency.

The WATSTORE system includes site identification, daily values files, and computer programs that produce streamflow statistics. Hydrologic-data files are maintained for (1) parameters measured on a daily or continuous basis, such as streamflow values, river stages, water temperatures, specific conductance values, and ground-water levels; (2) annual peak values for steamflow and stage; (3) chemical analyses for surface- and ground-water sites; and (4) ground-water site inventory, including location, identification and geohydrologic characteristics. The data-processing, storage, retrieval, and analysis capabilities of WATSTORE are described in the system user's guide compiled by Hutchison (1975). Information on the availability of data analyses may be obtained from: U.S. Geological Survey, 150 Causeway Street, Suite 1309, Boston, MA 02114.

A brief description of the streamflow statistics computed using the WATSTORE system is included below. Streamflow characteristics representing annual, monthly, and daily flow statistics were selected for this analysis because they are useful in planning and design studies in this region. The streamflow statistics computed following the procedures given below are listed in table 4 (at the end of the report).

Annual and monthly flow characteristics (means and standard deviations) for 15 gaging stations were computed with the "Daily Values Monthly and Annual Statistics" computer program W4422 (Price and Meeks, 1977) using observed daily flow records. Maximum and minimum, monthly means (fig. 9 and table 4) were obtained from output provided by this program. The monthly hydrograph for Charles River at Dover is shown in figure 9.

Characteristics of the flow-duration curve (the daily flow exceeded 99, 95, 90, 75, 70, 50, 25, and 10 percent of the time) were computed for 15 gaging stations by means of computer program A969, "Daily Values Statistics" (Meeks, 1977). An example of a flow-duration curve for the Parker River at Byfield is given in figure 10. Low-flow characteristics (annual 7-day mean low flows at the 2-year and 10-year recurrence intervals 7Q2 and 7Q10, respectively) were also calculated for 11 gaging stations by program A969. In this program, a log-Pearson Type III distribution is fitted to a set of observed annual 7-day mean low flows to obtain coordinates of the computed low-flow frequency curve. If the log-Pearson Type III curve did not adequately fit a plot of the observed data, especially in the low end, then a graphical curve was drawn. The graphical frequency curve was used to interpret the observed data when necessary because a graphical curve is the basic curve to use in analyzing the frequency of annual low flows according to Riggs (1971, 1972). The frequency curve for Neponset River at Norwood is shown in figure 11.

Additional flow data, including flood-frequency analyses, are available from WATSTORE. Peak discharges for selected recurrence intervals for 82 sites in Massachusetts are given in Wandle (1982).

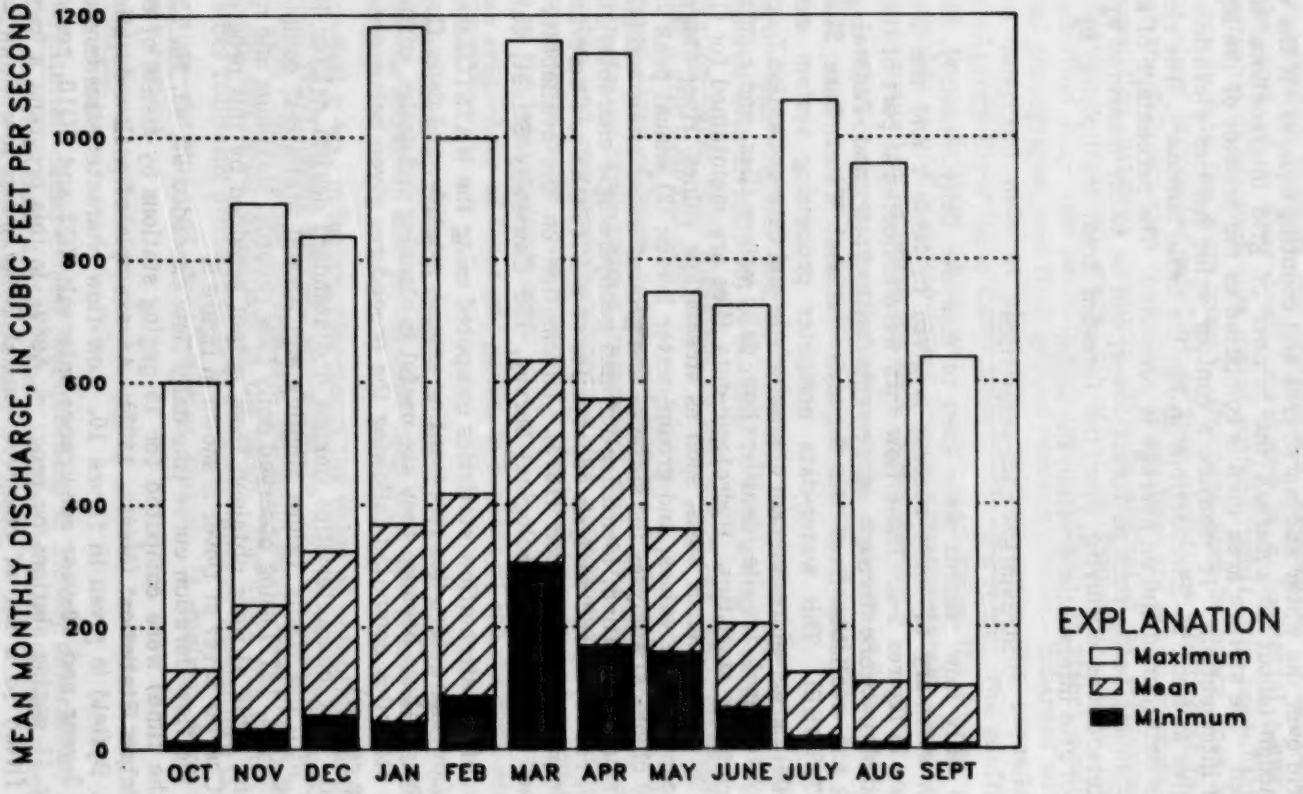


Figure 9.--Monthly discharges and extremes for the Charles River at Dover, Mass. (site 130), during 1938-81

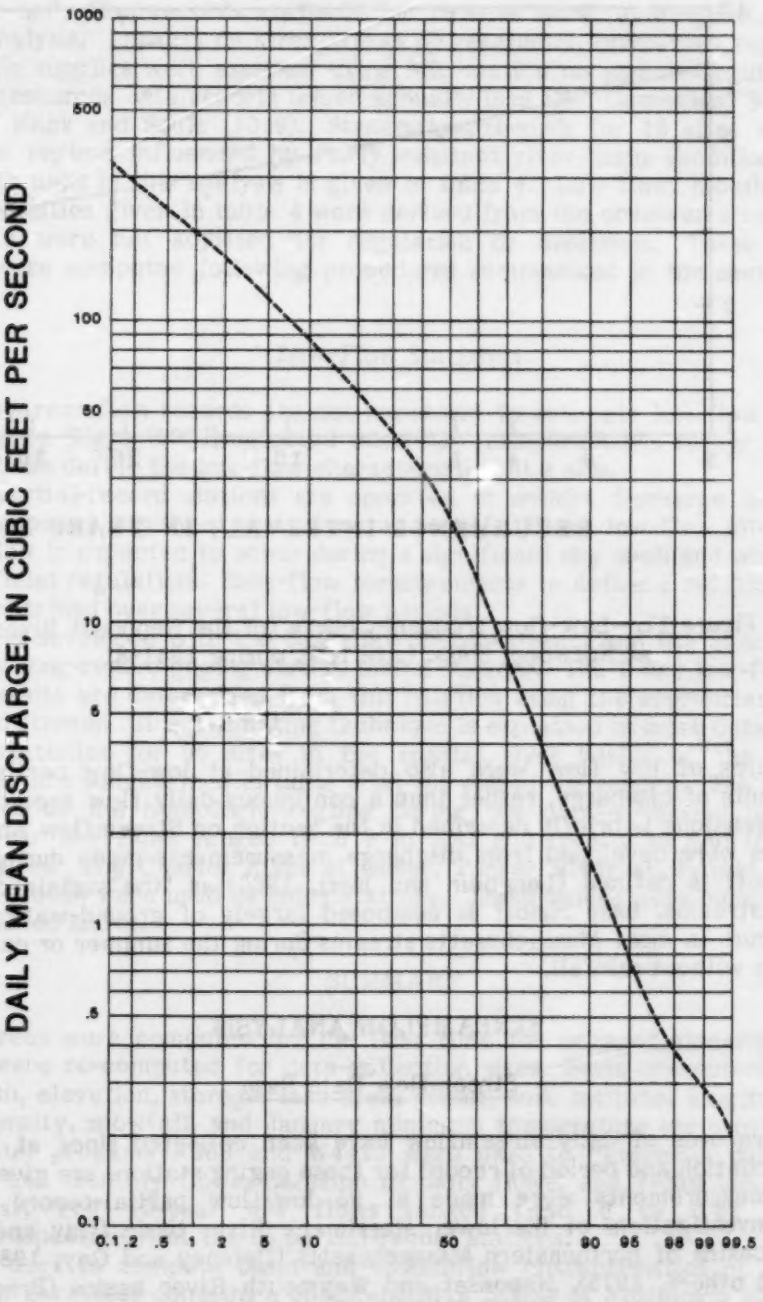


Figure 10.--Flow-duration curve for the Parker River at Byfield, Mass.(site 3), during 1946-81

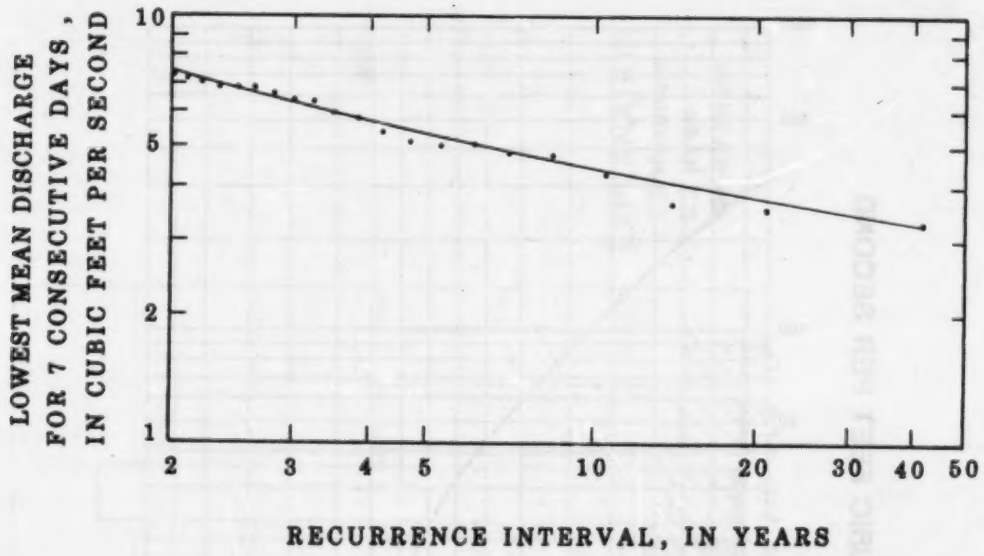


Figure 11.—Low-flow frequency curve for the Neponset River at Norwood, Mass. (site 166), during 1941-81

Characteristics of low flow were also determined at low-flow partial-record stations where measurements of discharge, rather than a continuous daily flow record, were available. This estimating technique is briefly described in the section on Streamflow Analysis. The 7-day low-flow statistics were developed from discharge measurements made during periods of base runoff. Base runoff is defined (Langbein and Iseri, 1960) as "the sustained or fair weather runoff. In most streams, base runoff is composed largely of ground-water effluent." Base runoff usually occurs in most Massachusetts streams during the summer or early fall after 5 to 7 consecutive days without rainfall.

STREAMFLOW ANALYSIS

Streamflow Data Base

Systematic records of daily streamflow have been collected since at least 1931 in the study area. The location and period of record for these gaging stations are given in table 2.

Discharge measurements were made at 95 low-flow partial-record sites during the water-resources investigations of the lower Merrimack River basin (Gay and Delaney, 1980), coastal drainage basins of northeastern Massachusetts (Delaney and Gay, 1980), Charles River basin (Walker and others, 1975), Neponset and Weymouth River basins (Brackley and others, 1973) and coastal drainage basins of southeastern Massachusetts (Williams and Tasker, 1974). Additional measurements were made at 93 miscellaneous sites for these studies and for the Ipswich River basin computer model study (Burns, 1973; Burns and James, 1972). Measurements were also collected as part of the Massachusetts low-flow network at four sites from 1959 to 1960 and at 12 sites during 1978.

Flow characteristics are useful in resource management and design studies if these variables represent a particular regulated flow sequence or the natural flow regime that is expected to occur in the future. A valid streamflow analysis is based upon flow records during a period of relatively constant river-basin conditions.

Daily Flow Statistics

Systematic daily flow records available for 16 sites were reviewed to select a data base for statistical analysis. Impacts on streamflows by reservoirs, diversions, regulation, and withdrawals for public supplies were assessed using information on stream regulation found in the series of water-resources data reports issued annually (see U.S. Geological Survey, 1980, for an example) and in Knox and Soule (1949). Streamflow records for 15 sites were selected that represent a flow regime influenced by fairly constant river-basin conditions (Wandle, 1983). The record length used in this analysis is given in table 4. Low flow, monthly flow, and flow-duration characteristics given in table 4 were derived from the observed streamflow records at each station and were not adjusted for regulation or diversion. These daily streamflow characteristics were computed following procedures summarized in the section on streamflow characteristics.

Low-Flow Statistics

Continuous streamflow records are not necessary to estimate low-flow characteristics at sites. According to Riggs (1972) selected base-flow measurements rather than a continuous daily flow record can define the low-flow characteristics at a site.

Low-flow partial-record stations are operated to collect discharge measurements when streamflow is composed largely of ground-water runoff. These low-flow sites are selected on streams where flow is expected to occur during a significant dry spell and where the flow is not affected by artificial regulation. Base-flow measurements to define a relation with concurrent gaged flows are obtained over several low-flow periods.

A relation is developed with the base-flow measurements and the concurrent daily mean flows at a nearby long-record gaging station (index station). The 7-day low-flow statistics (7Q2 and 7Q10) for the site are determined from this relation using the appropriate low-flow statistics for the gaged stream. This estimating technique is explained in more detail by Riggs (1972).

Low-flow statistics for 95 sites in the coastal river basins of the North Shore and Massachusetts Bay are summarized in table 5 (at the end of the report). The low-flow statistics are representative of the hydrologic regime during the data-collection period. Seven-day, 2-year, and 10-year low flows ranged from 0 to 0.82 and from 0 to 0.62 $(ft^3/s)/mi^2$, respectively, at these sites. The Charles River at Dover, Parker River at Byfield, and Squannacook River near West Groton were used as index stations. These values were computed following the procedures mentioned above.

SUMMARY

Drainage areas were computed for the first time for ungaged streams draining greater than 3 mi^2 and were re-computed for data-collection sites. Basin characteristics for drainage area, slope, length, elevation, storage, lake area, forest, soil, latitude, longitude, precipitation, precipitation intensity, snowfall, and January minimum temperature are provided for 11 gaging stations. Computer progams A969 and W4422 were used to determine daily flow statistics including annual and monthly flows, duration of daily flows, and 7-day low-flow values. The seven-day, 2-year, and 10-year low flows ranged from 0 to 0.82 and from 0 to 0.62 $(ft^3/s)/mi^2$, respectively, at the 95 partial-record stations.

Techniques used to compute basin and streamflow characteristics of a river basin are summarized. This gazetteer contains a comprehensive listing of hydrologic characteristics that should prove useful to those concerned with water-resources activities.

Table 1.—Stream-order listing, selected drainage areas, and locations of subbasins within the coastal river basins of the North Shore and Massachusetts Bay

[Sites with streamflow information listed in tables 2, 4, or 5 are marked with an asterisk. The hierarchical listing is modified from Halliwell and others, 1982. Drainage areas are shown for sites as explained in the section on basin characteristics. These areas are not adjusted for manmade changes in the flow system.]

Stream name	Location	Drainage area, in square miles
COASTAL RIVER BASINS OF THE NORTH SHORE		
Blackwater River	State Route 86	7.32
Unnamed tributary	Seabrook Road in New Hampshire	1.01
Smallpox Brook	Lafayette Road	*1.82
Meader Brook		
COASTAL RIVER BASINS OF PLUM ISLAND SOUND		
Plum Island River (connects to Merrimack River)		
Little Pine Island Creek		
Pine Island Creek		
Jericho Creek		
Pine Creek		
Grape Island Creek		
Eagle Hill River		
Stacy Creek		
Six Goose Creek		
Paine Creek		
Third Creek		
Roger Island River		
Laws Creek		
Broad Creek		
Metcalf Creek		
Lords Creek		
Nelson Island Creek		
Mud Creek		
Carolton Creek		
Sawyer Creek		
PARKER RIVER BASIN		
Parker River including The Thorofare	Mouths combined	60.4
Parker River	State Route 1A	59.5
Little River	Newman Road	8.34
Little River	Hanover Street	5.38
Mill River		
Ox Pasture Brook	Mouth	2.17
Mill River	Glen Street	12.8
Bachelder Brook		
Great Swamp Brook		
Mill River	Dodge Road	5.36
Muddy Brook		

Table 1.—Stream-order listing, selected drainage areas, and locations of subbasins within the coastal river basins of the North Shore and Massachusetts Bay (Continued)

Stream name	Location	Drainage area, in square miles
PARKER RIVER BASIN (Continued)		
Parker River	U.S. Route 1	30.2
Wheeler Brook	Mouth	2.31
Jackman Brook		
Parker River	100 feet upstream from Interstate Route 95	*21.3
Beaver Brook	Mouth	3.68
Parker River tributary	North Street	*.68
Penn Brook	North Street	4.00
Parker River	Pond Street	7.59
Parker River	Pine Plain Road	4.06
ROWLEY RIVER BASIN		
Rowley River	Mouth	9.92
Rowley River	Boston and Maine Railroad	7.51
Club Head Creek		
Shad Creek		
West Creek		
Sand Creek		
Egypt River		
Muddy Run	Mouth	2.66
(Unnamed tributary)		
Dow Brook		
Bull Brook	Bull Brook Reservoir outlet	2.36
IPSWICH RIVER BASIN		
Ipswich River	Mouth	156
Fox Creek		
Treadwell Island Creek		
Neck Creek		
Labor in Vain Creek		
Kimball River		
Miles River	Mouth	16.9
Miles River	State Route 1A	*16.8
Long Causeway		
Miles River	Larch Row	7.56
Ipswich River	Mill Road	*130
Black Brook	Mouth	3.18
Ipswich River	200 feet downstream from Willowdale Dam	*125
Gravelly Brook	Mouth	2.28
Howlett Brook	Ipswich Road	*10.9
Pye Brook	Haverhill Road	*6.67
Mile Brook	Mouth	1.26
Idlewild Brook		
Ipswich River	High Street	*100
Ipswich River	U.S. Route 1	*98.5

Table 1.—Stream-order listing, selected drainage areas, and locations of subbasins within the coastal river basins of the North Shore and Massachusetts Bay (Continued)

Stream name	Location	Drainage area, in square miles
IPSWICH RIVER BASIN (Continued)		
Ipswich River	Rowley Bridge Road	*97.2
Fish Brook	Endicott Road	*17.7
Fish Brook	River Road	*17.5
Fish Brook	Brookview Road	*9.87
Mosquito Brook	Foster Street	3.27
Nichols Brook	Mouth	3.10
Ipswich River	Peabody Street	*74.1
Boston Brook	Peabody Street	*10.8
Boston Brook	Liberty Street	*8.24
Boston Brook	Essex Street	*5.04
Emerson Brook	Mill Street	*6.31
Ipswich River	State Route 62	*56.0
Unnamed tributary	Middleton Pond outlet	1.53
Norris Brook	Mouth	4.53
Ipswich River	700 feet downstream from Boston Street	*44.5
Wills Brook	Railroad Grade	*1.77
Ipswich River tributary	Willow Street	*2.01
Ipswich River	Central Street	*37.3
Martins Brook	Park Street	*13.3
Martins Brook	Martins Pond outlet	7.50
Skug River	Central Street	*6.31
Ipswich River	Upstream from Martins Brook	23.8
Bear Meadow Brook	Mouth	4.83
Bear Meadow Brook	Haverhill Street	*4.41
Ipswich River	Woburn Street	*14.3
Lubbers Brook	Mouth	5.62
Lubbers Brook	Concord Street	*5.53
Lubbers Brook	Main Street	*2.85
Ipswich River	Upstream from Lubbers Brook	8.70
Ipswich River	Wildwood Street	*8.22
Maple Meadow Brook	State Route 38	*4.04
Mill Brook		
Ipswich River	Burlington Road	*1.11
COASTAL RIVER BASINS OF THE NORTH SHORE		
Castle Neck River		
Hog Island Channel		
Essex River	Main Street	9.42
Soginese Creek		
Lufkin Creek		
Ebben Creek		
Alewife Brook	Apple Street	6.89
Walker Creek	Concord Street	1.96
Lanes Creek		
Farm Creek		

Table 1.—Stream-order listing, selected drainage areas, and locations of subbasins within the coastal river basins of the North Shore and Massachusetts Bay (Continued)

Stream name	Location	Drainage area, in square miles
COASTAL RIVER BASINS OF THE NORTH SHORE (Continued)		
Annisquam River		
Mill River	State Route 127	2.32
Unnamed tributary		
Alewife Brook		
Jones River		
Little River		
Mill Brook		
Saratoga Creek		
Sawmill Brook		
COASTAL RIVER BASINS OF MASSACHUSETTS BAY		
Unnamed tributary	Mouth, at Kettle Cove	1.72
Wolf Trap Brook		
Cat Brook	State Route 127	5.02
Causeway Brook		
Sawmill Brook		
East Branch Cat Brook		
Chubb Creek		
Bass River	Marine Corps Golf Course	*1.38
Danvers River		
Porter River	Mouth	4.42
Frost Fish Brook		
Porter River tributary	State Route 35	*.35
Crane River	Mouth	5.72
Beaver Brook	Pickering Street	*1.87
Crane Brook		
Waters River		
North River	50 feet downstream from North Street	11.5
Proctor Brook	Upstream from Goldthwait Brook	2.91
Strongwater Brook		
Goldthwait Brook	Mouth	6.34
Tapley Brook	Washington Street	2.16
Forest River	Mouth	2.13
Saugus River	Mouth	48.2
Pines River	Mouth	10.0
Diamond Creek		
Saugus River	State Route 107	36.3
Cedar Brook		
Shute Brook		
Fiske Brook		
Bennetts Pond Brook	Mouth	3.33
Saugus River	Downstream from Hawkes Brook	14.0
Hawkes Brook	Mouth	2.51
Mill River		
Beaverdam Brook	Mouth	2.29

Table 1.--Stream-order listing, selected drainage areas, and locations of subbasins within the coastal river basins of the North Shore and Massachusetts Bay (Continued)

Stream name	Location	Drainage area, in square miles
	COASTAL RIVER BASINS OF MASSACHUSETTS BAY (Continued)	
Saugus River	Boston and Maine Railroad	5.30
Belle Isle Inlet		
Short Beach Creek		
Sales Creek		
Little Mystic Channel		
Chelsea River		
Mill River		
	MYSTIC RIVER BASIN	
Mystic River	Mystic River Bridge	66.0
Island End River		
Mystic River	Amelia Earhart Dam	*62.7
Malden River	Mouth	10.7
Spot Pond Brook		
Unnamed tributary	South Reservoir outlet	.76
Alewife Brook	Mouth	8.85
Little River		
Mill Brook	1200 feet upstream from mouth	*5.21
Unnamed tributary		
Munroe Brook		
Aberjona River	Inlet upper Mystic Lake	a24.6
Aberjona River	Bacon Street	a24.5
Aberjona River	0.5 mile upstream from head of Mystic Lakes	*a24.1
Aberjona River	Main Street	a24.0
Unnamed tributary		
Horn Pond Brook	Horn Pond outlet	8.82
Sucker Brook		
Fowle Brook		
Shaker Glen Brook	Lexington Street	*2.66
Cummings Brook	Lexington Street	*3.33
Little Brook		
Aberjona River	Main Street	a13.9
Aberjona River	20 feet upstream from Swanton Street	*a13.4
Aberjona River	Washington Street	*a11.9
Unnamed tributary	North Reservoir outlet	.63
Sweetwater Brook	Maple Street	*2.09
Aberjona River	Montvale Avenue	*8.93
Aberjona River	0.4 mile downstream from Salem Street	*8.50
Aberjona River	Salem Street	*6.91
Aberjona River	State Route 128	*5.54
Halls Brook	New Boston Street	*1.51
Willow Brook	Nichols Street	*.53
	COASTAL RIVER BASINS OF MASSACHUSETTS BAY	
Reserved Channel		
Fort Point Channel		

Table 1.--Stream-order listing, selected drainage areas, and locations of subbasins within the coastal river basins of the North Shore and Massachusetts Bay (Continued)

Stream name	Location	Drainage area, in square miles
	CHARLES RIVER BASIN	
Charles River	Mouth	311
Muddy River		
Stony Brook		
Cheese Cake Brook	Mouth	2.69
Beaver Brook	River Street	11.4
Unnamed tributary		
Chester Brook	Mouth	5.14
Clematis Brook		
Beaver Brook	State Route 60	*4.00
Charles River	800 feet downstream from Moody Street	*b250
Unnamed tributary	Mouth	23.7
Stony Brook		
Hobbs Brook	Mouth	8.47
Hobbs Brook	Cambridge Reservoir outlet	6.85
Hobbs Brook	Abandoned road	*1.31
Cherry Brook	Conant Street	*2.13
Stony Brook	Merriam Street	*5.64
Iron Mine Brook		
Seaverns Brook	Mouth	2.33
Rosemary Brook	Mouth	3.89
Hurd Brook		
Charles River	50 feet upstream from State Route 9	*211
South Meadow Brook		
Charles River	Nahanton Street	207
Sawmill Brook	Road 200 feet upstream from mouth	2.81
Sawmill Brook	Baker Street	*1.97
Mother Brook (diversion to Neponset River)		*—
Charles River tributary No.2	State Route 1	*4.04
Lowder Brook		
Charles River	State Route 128 (South)	*192
Alder Brook		
Rock Meadow Brook	Mouth	2.73
Rock Meadow Brook	Dover Street	*1.01
Powissett Brook		
Charles River	0.3 mile downstream from bridge	*183
Noanet Brook	Dedham Street	*1.91
Trout Brook	Haven Street	*3.72
Trout Brook tributary	Springdale Avenue	*.63
Waban Brook	Mouth	15.8
Fuller Brook	Mouth	5.35
Fuller Brook	Brook Street	*3.93
Waban Brook	Upstream from Fuller Brook	10.4
Unnamed tributary		
Boulder Brook	Weston Road	*.90

Table 1.--Stream-order listing, selected drainage areas, and locations of subbasins within the coastal river basins of the North Shore and Massachusetts Bay (Continued)

Stream name	Location	Drainage area, in square miles
CHARLES RIVER BASIN (Continued)		
Charles River (Continued)		
Waban Brook (Continued)		
Unnamed tributary		
Unnamed tributary	Jennings Pond outlet	2.64
Bogle Brook	State Route 9	4.52
Bogle Brook tributary	State Route 30	*.83
Charles River	Upstream from Fuller Brook	157
Charles River	South Natick Dam	*156
Davis Brook	Mouth	2.23
Indian Brook		
Sewall Brook	Forest Street	*2.58
Charles River	State Route 27	*141
Unnamed tributary		
Bogastow Brook	Bogastow Pond outlet	*23.4
Bogastow Brook	Orchard Street	*13.0
Dirty Meadow Brook		
Dopping Brook	Mouth	2.02
Unnamed tributary	Houghton Pond outlet	2.62
Jar Brook	Winter Street	*.62
Winthrop Canal	Elm Street	*2.35
Mill Brook	Farm Street	*2.12
Vine Brook	North Street	*.94
Charles River	0.5 mile upstream from State Route 109	*107
Stop River		
Sewall Brook		
Horse Brook		
Stop River tributary No. 2	Indian Hill Road	*.71
Stop River	South Street	*12.8
Stop River tributary	Boardmann Street	*.76
Stony Brook	Diamond Street	*1.46
Stop River	Upstream from Stony Brook	3.15
Charles River	Myrtle Street	*84.0
Mill River		
Cress Brook	Myrtle Street	*1.54
Mill River	Miller Street	*13.8
Unnamed tributary		
Miller Brook		
Eagle Brook		
Unnamed tributary	Mouth at Lake Pearl	2.62
Safe Meadow Brook	Whiting Street	*.73
Uncas Brook		
Shepards Brook	Lincoln Street	*2.10
Shepards Brook tributary	Lincoln Street	*1.05

Table 1.—Stream-order listing, selected drainage areas, and locations of subbasins within the coastal river basins of the North Shore and Massachusetts Bay (Continued)

Stream name	Location	Drainage area, in square miles
	CHARLES RIVER BASIN (Continued)	
Charles River	Shaw Street	*60.3
Chicken Brook	Cottage Street	*7.22
Chicken Brook	State Route 16	*2.16
Mine Brook	Pond Street	*14.2
Mine Brook	Grove Street	*9.85
Dix Brook	Vine Street	*.23
Miscoe Brook	Washington Street	*2.14
Miscoe Brook	South Street	*1.15
Hopping Brook	West Street	*10.1
Unnamed tributary		
Beaver Brook	Marshall Street	*1.96
Unnamed tributary	Gorwinn Drive	2.77
Stall Brook	State Route 126	*3.76
Charles River	Maple Street	20.7
Beaver Brook		
Charles River	Depot Street	*14.5
Charles River tributary	State Route 140	*.62
Godfrey Brook	Mouth	2.06
Charles River	State Route 16	*8.28
Unnamed tributary		
Huckleberry Brook	Lake Lousia inlet	3.23
Charles River	State Route 85	*1.59
Echo Lake tributary	Granite Street	*.31
	NEPONSET RIVER BASIN	
Neponset River	Mouth	117
Gulliver Creek		
Unquity Brook		
Pine Tree Brook	Blue Hills Parkway	6.76
Trout Brook		
Balster Brook		
Chestnut Run		
Mother Brook (diversion from Charles River)		*—
Neponset River	Neponset Valley Parkway	*93.2
Neponset River	Dam of Tileston and Hollingsworth Co.	*88.5
Ponkapog Brook	Elm Street	*3.76
Pecunit Brook	Elm Street	*.79
Neponset River	Dedham Street	*82.2
Purgatory Brook	U.S. Route 1	*2.91
Plantingfield Brook	U.S. Route 1	*1.52
Plantingfield Brook	State Route 1A	*1.02
Purgatory Brook	State Route 1A	*1.27

Table 1.--Stream-order listing, selected drainage areas, and locations of subbasins within the coastal river basins of the North Shore and Massachusetts Bay (Continued)

Stream name	Location	Drainage area, in square miles
NEPONSET RIVER BASIN (Continued)		
Neponset River (Continued)		
East Branch Neponset River	100 feet downstream from Washington Street	*27.2
Pequid Brook	Pleasant Street	*6.22
Pequid Brook	State Route 138	*4.55
York Brook		
Massapoag Brook	Mouth	10.4
Beaver Brook	Maskwonicut Street	*2.43
Massapoag Brook	State Route 27	*6.31
Devil Brook		
Massapoag Brook	Ames Street	*4.23
Unnamed tributary		
Sucker Brook		
Unnamed tributary		
Beaver Meadow Brook	Pleasant Street	*2.45
Steep Hill Brook	Bailey Street	*6.65
Neponset River tributary No. 2	Edge Hill Road	*.39
Traphole Brook	Summer Street	*3.40
Neponset River	200 feet upstream from Pleasant Street	*34.7
Hawes Brook	Washington Street	*8.63
Germany Brook	100 feet upstream from Nichols Street	*2.37
Willett Pond outlet	Pond outlet	*4.88
Mill Brook	Mouth	*2.27
Mill Brook	State Route 109	*1.52
Bubbling Brook	100 feet upstream from Pettee Pond	*1.38
Bubbling Brook tributary	North Street	*.75
Bubbling Brook	North Street	*.19
Neponset River	Washington Street	25.3
Neponset River tributary	Gould Street	*1.52
Unnamed tributary		
Spring Brook	200 feet downstream from Memorial Pond	*1.84
Unnamed tributary		
Mine Brook	Turner Pond inlet	*6.00
Mine Brook	Philip Street	*3.56
Mill Brook		
Tubwreck Brook		
Neponset River	Main Street	*11.5
School Meadow Brook	Washington Street	*2.80
Neponset River	South Street	*7.62
Neponset River	North Street	*1.92
COASTAL RIVER BASINS OF MASSACHUSETTS BAY		
Blacks Creek		
Furnace Brook	20 feet downstream from Hancock Street	*3.81

Table 1.--Stream-order listing, selected drainage areas, and locations of subbasins within the coastal river basins of the North Shore and Massachusetts Bay (Continued)

Stream name	Location	Drainage area, in square miles
WEYMOUTH FORE RIVER BASIN		
Weymouth Fore River	State Route 3A	36.1
Town River		
Town Brook	200 feet downstream from Miller Stile Road	*4.22
Bents Creek		
Hayward Creek		
Smelt Brook	Mouth	2.10
Monatiquot River	Middle Street	*27.6
Monatiquot River	Jefferson Street	*24.8
Sunset lake outlet	Pond Street	*.50
Farm River	Pond Street	*9.97
Bouncing Brook		
Unnamed tributary	150 feet downstream from Great Pond outlet	3.88
Norroway Brook	Oak Street	*1.47
Blue Hill River	100 feet upstream from Great Pond outlet	4.04
Beech Run		
Coon Hollow Brook		
Cochato River		
Martin Brook		
Cranberry Brook	Washington Street	*1.72
Cochato River	Railroad	*10.4
Tumbling Brook	Center Street	*.89
Glovers Brook	North Street	*2.61
Mary Lee Brook	800 feet upstream from mouth	*1.36
Unnamed tributary		
Unnamed tributary	South Street	*.92
Trout Brook	0.2 mile upstream from inlet to Lake Holbrook	*1.11
Trout Brook	0.5 mile upstream from inlet to Lake Holbrook	*.93
Three Swamp Brook		
WEYMOUTH BACK RIVER BASIN		
Weymouth Back River	State Route 3A	17.5
Fresh River	Commercial Street	*.94
Weymouth Back River tributary	Broad Street	*.37
Whitmans Pond outlet	Pleasant Street	*12.6
Mill River	Middle Street	*6.22
Mill River	Front Street	*5.76
Mill River	Weymouth Great Pond outlet	2.68
Old Swamp River	Between divided lanes of State Routes 3 and 128	*4.50
Old Swamp River	Pleasant Street	*3.83
Old Swamp River	Pine Street	*3.74
Old Swamp River	Talbot Street	*3.43
Old Swamp River	Sharp Street	*1.33
Old Swamp River	Forrest Street	*.24

Table 1.—Stream-order listing, selected drainage areas, and locations of subbasins within the coastal river basins of the North Shore and Massachusetts Bay (Continued)

Stream name	Location	Drainage area, in square miles
	WEIR RIVER BASIN	
Weir River		
Unnamed tributary		
Turkey Hill Run		
Rattlesnake Run		
Weir River	Macadam road	*14.6
Unnamed tributary		
Accord Brook	400 feet upstream from South Pleasant Street	*3.76
Tower Brook		
Crooked Meadow River	Main Street	*4.90
Plymouth River	Plymouth River Road	*2.97
Eel River		
Fulling Mill Brook		

a Excludes 0.63 mi^2 drained by Winchester's North Reservoir.
b Includes 23.7 mi^2 drained by Stony Brook.

Table 2.—Summary of daily flow records and peak-flow records available in the coastal river basins of the North Shore and Massachusetts Bay

Number in figures 2-8	Station number	Station name	Location	Period of record	Remarks
		PARKER RIVER BASIN			
2	01100900	Parker River tributary near Georgetown, Mass.	North Street	1964-74	Peak-flow site. Discontinued.
3	01101000	Parker River at Byfield, Mass.	100 feet upstream from Interstate Route 95	1946-81	Some regulation at low flow by mill and ponds.
		IPSWICH RIVER BASIN			
5	01101300	Maple Meadow Brook at Wilmington, Mass.	State Route 38	1963-74	Diversion for municipal supply of Wilmington since January 1964. Discontinued.
16	01101500	Ipswich River at South Middleton, Mass.	700 feet downstream from Boston Street	1939-81	Occasional regulation by mill. Diversions for municipal supply of Reading, Lynn, and Peabody.
31	01102000	Ipswich River near Ipswich, Mass.	200 feet downstream from Willowdale Dam	1931-81	Some regulation by reservoirs. Diversions for municipal supply of Lynn, Reading, Peabody, Salem, Danvers, and Beverly.
		MYSTIC RIVER BASIN			
70	01102500	Aberjona River at Winchester, Mass.	0.5 mile upstream from head of Mystic Lakes	1940-81	Flow affected by diversions for industrial use and for municipal supply of Woburn and Winchester and leakage from Winchester's North Reservoir. Some regulation by Winchester at dam 1800 feet upstream.
71	01103000	Mystic Lake near Medford, Mass.	Outlet of upper Mystic Lake	1879-97	Discharge based on quantity pumped for municipal supply of Charlestown and adjusted for change in Mystic Lake contents. Monthly discharge only.

Table 2.—Summary of daily flow records and peak-flow records available in the coastal river basins of the North Shore and Massachusetts Bay (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Remarks
		CHARLES RIVER BASIN			
106	01103305	Charles River near Millis, Mass.	150 feet upstream from Myrtle Street	1975-80	Flow affected by diversions to and from basin for municipal supplies.
130	01103500	Charles River at Dover, Mass.	0.3 mile downstream from bridge	1938-81	Flow affected by diversions to and from basin for municipal supplies. Occasional diversion since 1951 from Sudbury River basin. Water-quality records 1975-81.
135	01104000	Mother Brook at Dedham, Mass.	100 feet upstream from Washington Street	1932-81	Mother Brook is diversion from Charles River to Neponset River.
139	01104200	Charles River at Wellesley, Mass.	50 feet upstream from State Route 9	1960-81	Flow affected by Mother Brook diversion and by diversions to and from basin for municipal supplies and at times from Sudbury River basin. Occasional regulation at dam 0.2 mile upstream.
147	01104500	Charles River at Waltham, Mass.	800 feet downstream from Moody Street	1932-81	Flow affected by Mother Brook diversion, diversions to and from basin for municipal supplies, water released at times from Stony Brook Reservoir, water released from Norumbega Reservoir. Diversion at times prior to 1963 from Lake Cochituate and at times since 1951 from Sudbury River basin. Some regulation by mills. Low flow completely regulated by powerplant prior to 1954.
148	01104600	Beaver Brook at Belmont, Mass.	State Route 60	1963-81	Peak-flow site.

Table 2.—Summary of daily flow records and peak-flow records available in the coastal river basins of the North Shore and Massachusetts Bay (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Remarks
			NEPONSET RIVER BASIN		
154	01104850	Mine Brook at Walpole, Mass.	Turner Pond inlet	1968	Discontinued.
158	01104900	Mill Brook at Westwood, Mass.	State Route 109	1964-74	Peak-flow site. Discontinued.
166	01105000	Neponset River at Norwood, Mass.	200 feet upstream from Pleasant Street	1940-81	Flow affected by mills and reservoirs and by several diversions for municipal and industrial use.
176	01105500	East Branch Neponset River at Canton, Mass.	100 feet downstream from Washington Street	1953-81	Flow regulated by Forge, Bolivar, Massapoag, and Reservoir Ponds, and other ponds. Diversion for municipal supply of Canton and Stoughton.
180	01105550	Plantingfield Brook at Norwood, Mass.	State Route 1	1964-74	Peak-flow site. Discontinued.
			COASTAL RIVER BASINS OF MASSACHUSETTS BAY		
187	01105557	Furnace Brook at Quincy, Mass.	20 feet upstream from Hancock Street	1973-80	Occasional regulation at low flow.
			WEYMOUTH FORE RIVER BASIN		
202	01105585	Town Brook at Quincy, Mass.	200 feet upstream from Miller Stile Road	1973-81	Diurnal fluctuation caused by plant. Flow regulated by Old Quincy Reservoir.
			WEYMOUTH BACK RIVER BASIN		
210	01105600	Old Swamp River near South Weymouth, Mass.	Between divided lanes of State Routes 3 and 128	1967-81	

Table 3.—Basin characteristics for stream-gaging stations in the coastal river basins of the North Shore and Massachusetts Bay

Basin characteristics	Station name and site number					
	Parker tributary near Georgetown, Mass. (2)	Parker River at Byfield, Mass. (3)	Maple Meadow Brook at Wilmington Mass. (5)	Ipswich River at South, Middleton, Mass. (16)	Ipswich River near Ipswich, Mass. (31)	Aberjona River at Winchester, Mass. (70)
Area, in square miles	0.68	21.3	4.04	44.5	125	a24.1
Slope, in feet per mile	11.1	6.23	23.5	5.10	2.50	—
Length, in miles	1.20	10.9	3.70	11.5	27.2	—
Elevation, in feet	100	120	140	110	130	—
Storage, in percent	50.5	14.7	14.8	17.8	9.89	—
Lake area, in percent	19.4	2.69	1.25	.99	1.36	—
Forest, in percent	85	70	63	71	74	—
Soils index, in inches	3.9	3.9	4.0	4.0	4.0	—
Latitude of gage, in decimal degrees	42.7342	42.7500	42.5375	42.5700	42.6600	42.4472
Longitude of gage in decimal degrees	70.9728	70.9500	71.1614	71.0300	70.8900	71.1394
Precipitation, in inches	41.0	40.7	41.0	40.8	40.8	—
Precipitation intensity for 2-year recurrence interval, in inches	3.0	3.2	3.0	3.2	2.9	—
Snowfall, in inches	55	55	60	60	55	—
January minimum temperature, in degrees Fahrenheit	19	20	19	20	20	—

a Excludes 0.63 mi^2 drained by Winchester's North Reservoir.

Table 3.—Basin characteristics for stream-gaging stations in the coastal river basins of the North Shore and Massachusetts Bay (Continued)

Basin characteristics	Station name and site number					
	Charles River near Millis, Mass. (106)	Charles River at Dover, Mass. (130)	Charles River at Wellesley, Mass. (139)	Charles River at Waltham, Mass. (147)	Beaver Brook at Belmont, Mass. (148)	Mill Brook at Westwood, Mass. (158)
Area, in square miles	84.0	183	211	b227	4.00	1.52
Slope, in feet per mile	—	4.47	—	—	21.0	53.5
Length, in miles	—	41.2	—	—	3.8	2.5
Elevation, in feet	—	230	—	—	230	280
Storage, in percent	—	3.58	—	—	11.2	18.7
Lake area, in percent	—	1.66	—	—	.49	.71
Forest, in percent	—	72	—	—	19	14
Soils index, in inches	—	4.6	—	—	3.4	4.0
Latitude of gage, in decimal degrees	42.1331	42.2560	42.3164	42.3722	42.3906	42.2058
Longitude of gage in decimal degrees	71.3628	71.2601	71.2283	71.2342	71.1975	71.2406
Precipitation, in inches	—	43.0	—	—	42.0	43.0
Precipitation intensity for 2-year recurrence interval, in inches	—	3.2	—	—	3.0	3.3
Snowfall, in inches	—	50	—	—	50	45
January minimum temperature, in degrees Fahrenheit	—	18	—	—	19	18

b Excludes 23.7 mi^2 drained by Stony Brook.

Table 3.—Basin characteristics for stream-gaging stations in the coastal river basins of the North Shore and Massachusetts Bay (Continued)

Basin characteristics	Station name and site number					
	Neponset River at Norwood, Mass. (166)	East Branch Neponset River at Canton, Mass. (176)	Plantingfield Brook at Norwood, Mass. (180)	Furnace Brook at Quincy, Mass. (187)	Town Brook at Quincy, Mass. (202)	Old Swamp River near South Weymouth, Mass. (210)
Area, in square miles	34.7	27.2	1.52	3.81	4.22	4.50
Slope, in feet per mile	23.8	—	88.1	—	—	15.7
Length, in miles	11.0	—	2.60	—	—	4.25
Elevation, in feet	210	—	180	—	—	140
Storage, in percent	3.49	—	4.56	—	—	11.9
Lake area, in percent	3.38	—	.68	—	—	.02
Forest, in percent	72	—	34	—	—	76
Soils index, in inches	4.3	—	4.0	—	—	3.8
Latitude of gage, in decimal degrees	42.1775	42.1544	42.2047	42.2578	42.2478	42.1903
Longitude of gage in decimal degrees	71.2013	71.1464	71.1869	71.0092	70.9978	70.9453
Precipitation, in inches	43.5	—	43.0	—	—	44.0
Precipitation intensity for 2-year recurrence interval, in inches	3.3	—	3.3	—	—	3.2
Snowfall, in inches	46	—	45	—	—	40
January minimum temperature, in degrees Fahrenheit	19	—	17	—	—	22

Table 4.—Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations

Annual and monthly flow characteristics:
QA is the mean annual discharge
SDQA is the standard deviation of mean annual discharge
QM is the mean discharge for M calendar month, M = 1 for January where the top line is the maximum mean; the middle line is the mean; the bottom line is the minimum mean.
SDQM is the standard deviation of mean discharge for M calendar month

Low-flow characteristics:
7Q2 is the annual minimum 7-day mean discharge for 2-year recurrence interval
7Q10 is the annual minimum 7-day mean discharge for 10-year recurrence interval

Flow-duration characteristics:
DPT is the daily discharge, exceeded PT percent of the time, from the flow-duration curve

Years of record:
YRSDAY is the number of years of daily flow record for this analysis
YRSLOW is the number of years of low-flow record for this analysis

Flow	Station name and site number				
	Parker River at Byfield, Mass. (3)	Maple Meadow Brook at Wilmington, Mass. (5)	Ipswich River at South Middleton, Mass. (16)	Ipswich River near Ipswich, Mass. (31)	Aberjona River at Winchester, Mass. (70)
ANNUAL					
QA	35.4	5.76	60.6	184	27.3
SDQA	10.5	2.31	20.7	57	9.14
MONTHLY					
Q10	123	1.14	240	685	104
	12.8	.21	25.4	68.2	11
	.18	.00	.55	4.80	.48
SDQ10	21.5	.40	43.0	.08	19.4
Q11	87.3	11.80	199	525	103
	27.3	2.87	43.6	124	20.5
	.92	.00	1.28	6.87	.59
SDQ11	24.2	4.44	44.2	123	21.9
Q12	92.9	18.5	169	503	95.7
	38.7	6.77	60.6	177	28.5
	1.74	.00	1.05	11.5	.63
SDQ12	26.2	6.48	49.9	136	24.0

Table 4.--Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations (Continued)

Flow	Station name and site number				
	Parker River at Byfield, Mass. (3)	Maple Meadow Brook at Wilmington, Mass. (5)	Ipswich River at South Middleton, Mass. (16)	Ipswich River near Ipswich, Mass. (31)	Aberjona River at Winchester, Mass. (70)
MONTHLY (Continued)					
Q1	116	11	215	566	169
	43.6	5.48	68.1	210	37.0
	2.98	.00	1.07	14.4	2.34
SDQ1	28.4	3.68	54.7	138	31.3
Q2	122	19.3	209	597	77.6
	49.9	8.21	79.9	229	39.9
	5.25	2.54	9.66	16.4	4.39
SDQ2	25.3	4.83	46.5	127	17.1
Q3	164	28.1	304	1045	125
	87.1	16.6	155	464	66.2
	41.4	7.83	63.8	125	30.5
SDQ3	30.2	7.97	56.2	184	25.7
Q4	157	20.8	292	872	117
	79.4	12.5	137	429	51.1
	27.6	3.60	34.3	131	12.4
SDQ4	33.0	5.79	63.1	188	23.7
Q5	149	16.8	298	833	134
	47.8	8.74	82.1	243	32.8
	19.2	2.73	18.5	92.3	11.3
SDQ5	24.9	4.66	47.9	122	21.4
Q6	93.3	17.1	180	521	91.6
	22.8	5.24	39.3	127	17.0
	4.25	.40	7.36	25.6	3.02
SDQ6	17.8	4.87	33.3	95.8	14.9
Q7	39.6	8.21	195	518	40.4
	8.30	1.94	19.2	58.0	7.79
	.97	.01	.74	5.75	.69
SDQ7	8.85	2.60	32.0	82.0	7.84

Table 4.—Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations (Continued)

Flow	Station name and site number				
	Parker River at Byfield, Mass. (3)	Maple Meadow Brook at Wilmington, Mass. (5)	Ipswich River at South Middleton, Mass. (16)	Ipswich River near Ipswich, Mass. (31)	Aberjona River at Winchester, Mass. (70)
MONTHLY (Continued)					
Q8	17.7	3.85	95.5	356	79.4
	5.32	.52	11.9	34.9	7.78
	.37	.00	.64	2.13	.62
SDQ8	4.68	1.19	17.8	54.1	12.7
Q9	65.8	1.37	164	390	78.2
	5.76	.21	15	41.8	7.96
	.12	.00	.26	1.76	.49
SDQ9	11.0	.42	29.1	72.1	12.8
LOW FLOW					
7Q2	.79	.00	1.4	6.0	.92
7Q10	.21	.00	.41	2.0	.46
FLOW DURATION					
D99	.27	.00	.43	2.6	.46
D95	.76	.00	.99	6.7	.68
D90	1.6	.00	2.1	11.6	1.0
D75	5.4	.01	7.2	29.5	3.7
D70	7.6	.19	9.7	39.0	5.3
D50	22.3	2.8	33.6	110	15.7
D25	50.2	8.3	88.5	257	37.2
D10	89.5	16.1	155	457	67.9
YEARS					
YEARSDAY	36	10	44	52	43
YRSLOW	35	9	42	50	41

Table 4.—Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations (Continued)

Flow	Station name and site number				
	Charles River near Millis, Mass. (106)	Charles River at Dover, Mass. (130)	Mother Brook at Dedham, Mass. (135)	Charles River at Wellesley, Mass. (139)	Charles River at Waltham, Mass. (147)
ANNUAL					
QA	154	298	78	269	294
SDQA	40.6	88.4	31.4	70.9	87.4
MONTHLY					
Q10	189	600	182	368	634
	110	130	26.6	138	137
	44.3	13.4	.00	23.2	24.5
SDQ10	55.3	124	37.5	104	126
Q11	248	892	308	480	1031
	128	236	56.6	214	310
	37.5	33.1	.61	34.0	38.7
SDQ11	82.3	169	62.0	122	185
Q12	312	838	285	678	739
	166	324	85.3	294	310
	59.3	54.6	.43	52.6	62.7
SDQ12	92.5	195	72.8	160	184
Q1	601	1180	287	1018	1173
	303	368	103	335	358
	74.5	45.3	.14	43.8	58.4
SDQ1	203	226	74.4	216	208
Q2	364	998	360	766	946
	193	417	114	371	383
	49.0	86.7	.14	95.7	111
SDQ2	109	196	74.9	188	187
Q3	439	1158	490	956	1329
	308	635	187	567	629
	210	304	.54	338	270
SDQ3	97.1	202	88.1	193	228

Table 4.—Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations (Continued)

Flow	Station name and site number				
	Charles River near Millis, Mass. (106)	Charles River at Dover, Mass. (130)	Mother Brook at Dedham, Mass. (135)	Charles River at Wellesley, Mass. (139)	Charles River at Waltham, Mass. (147)
MONTHLY (Continued)					
Q4	352	1137	381	877	1177
	246	571	159	532	595
	150	169	26.5	161	195
SDQ4	69.2	231	87.7	189	243
Q5	230	746	253	575	798
	165	359	90.6	332	355
	97.0	158	.00	176	135
SDQ5	54.4	141	56.4	114	137
Q6	103	725	238	572	694
	71.2	205	49.4	186	199
	40.6	67.2	.00	67.3	56.5
SDQ6	23.9	125	49.7	118	115
Q7	54.3	1060	339	280	915
	39.9	125	23.3	101	122
	22.5	19.5	.06	29.2	26.7
SDQ7	11.8	163	49.4	70.3	137
Q8	151	956	306	211	873
	73.8	109	21.8	79.5	105
	25.0	9.01	.00	13	14.6
SDQ8	49.1	162	53.6	58.5	145
Q9	67.6	640	189	253	616
	49.9	103	21.8	89.4	114
	17.7	7.78	.10	14.9	19.6
SDQ9	16.9	120	37.7	61.1	114
LOW FLOW					
7Q2	—	32.5	—	26.8	34.0
7Q10	—	12.9	—	10.3	14.3

Table 4.--Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations (Continued)

Flow	Station name and site number				
	Charles River near Millis, Mass. (106)	Charles River at Dover, Mass. (130)	Mother Brook at Dedham, Mass. (135)	Charles River at Wellesley, Mass. (139)	Charles River at Waltham, Mass. (147)
FLOW DURATION					
D99	17.0	16.0	0.04	13.5	5.80
D95	22.9	29.6	.48	27.2	25.4
D90	30.4	40.8	1.80	38.7	40.1
D75	49.7	82.3	8.80	84.9	88.5
D70	57.2	101	12.6	105	108
D50	107	206	41.1	198	210
D25	204	423	118	374	413
D10	332	691	210	615	669
YEARS					
YRSDAY	7	44	50	23	51
YRSLOW	—	43	—	21	26

Table 4.--Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations (Continued)

Flow	Station name and site number				
	Neponset River at Norwood, Mass. (166)	East Branch Neponset River at Canton, Mass. (176)	Furnace Brook at Quincy, Mass. (187)	Town Brook at Quincy, Mass. (202)	Old Swamp River near South Weymouth, Mass. (210)
ANNUAL					
QA	52.9	50.9	5.79	8.12	8.92
SDQA	16.1	13.5	.78	2.06	1.89
MONTHLY					
Q10	126	100	7.35	15.1	10.5
	27.3	31.6	4.15	7.20	4.76
	6.01	6.42	1.16	2.99	1.20
SDQ10	23.3	26.4	2.34	4.35	3.05
Q11	188	161	12.1	18.5	22.4
	44.5	47.1	5.88	7.72	9.32
	5.88	8.35	1.94	2.22	3.35
SDQ11	32.4	33.2	3.31	5.58	5.39
Q12	156	129	12.8	20.3	30.9
	57.6	62.5	7.84	9.74	14.3
	7.78	9.78	3.16	2.14	2.77
SDQ12	37.8	31.4	4.03	6.63	8.83
Q1	224	177	23.3	36.0	30.8
	67.4	71.2	10.4	14.2	12.9
	5.35	10.6	3.16	2.52	2.16
SDQ1	44.9	38.9	6.65	10.5	8.28
Q2	188	132	8.69	14.8	24.6
	73.1	71.7	6.59	11.0	12.8
	13.4	20.1	2.41	2.38	2.86
SDQ2	33.9	26.5	2.23	3.79	5.00
Q3	211	177	16.9	19.0	35.5
	111	97.6	10.1	12.3	17.5
	49.4	47.6	4.80	6.10	6.15
SDQ3	38.9	33.3	3.88	4.91	9.49

Table 4.—Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations (Continued)

Flow	Station name and site number				
	Neponset River at Norwood, Mass. (166)	East Branch Neponset River at Canton, Mass. (176)	Furnace Brook at Quincy, Mass. (187)	Town Brook at Quincy, Mass. (202)	Old Swamp River near South Weymouth, Mass. (210)
MONTHLY (Continued)					
Q4	189	190	10.5	15.0	20.3
	96.0	85	8.14	9.08	11.9
	31.8	20.7	4.77	5.49	5.61
SDQ4	40.5	36.1	1.99	3.30	3.78
Q5	146	142	8.77	11.5	21.6
	61.9	54.9	5.72	7.40	9.52
	25.6	20.2	3.74	4.30	4.23
SDQ5	27.0	28.2	1.75	2.31	5.04
Q6	116	92.4	3.68	8.02	23.4
	33.6	28.8	2.67	4.37	5.75
	8.71	8.62	1.22	2.13	1.17
SDQ6	22.8	17.5	.76	1.95	5.30
Q7	79.3	55.8	3.11	9.33	7.36
	18.8	16.6	1.76	3.66	2.15
	6.73	4.46	.92	2.03	.84
SDQ7	13.5	12.6	.67	2.31	1.61
Q8	226	203	7.55	12.3	7.72
	22.4	22.3	3.69	6.17	2.56
	4.30	3.64	1.24	1.76	.50
SDQ8	33.7	36.9	2.48	3.69	2.02
Q9	87.7	76.2	4.96	7.25	7.72
	21.8	22.1	2.49	4.67	3.11
	5.94	4.42	.91	1.16	.18
SDQ9	17.0	18.1	1.33	2.45	2.48
LOW FLOW					
7Q2	7.4	6.4	—	—	.35
7Q10	4.5	3.6	—	—	.16

Table 4.--Streamflow characteristics, in cubic feet per second, at selected stream-gaging stations (Continued)

Flow	Station name and site number				
	Neponset River at Norwood, Mass. (166)	East Branch Neponset River at Canton, Mass. (176)	Furnace Brook at Quincy, Mass. (187)	Town Brook at Quincy, Mass. (202)	Old Swamp River near South Weymouth, Mass. (210)
FLOW DURATION					
D99	4.5	3.7	0.44	0.8	0.20
D95	7.0	6.0	.68	1.0	.45
D90	9.1	7.9	.91	1.3	.75
D75	15.5	15.6	1.8	2.3	2.2
D70	18.3	19.3	2.3	2.7	2.8
D50	35.6	37.2	4.1	4.6	5.6
D25	72.5	70.3	7.2	9.7	10.3
D10	121	114	12.7	18.7	19.7
YEARS					
YRSDAY	42	29	8	10	18
YRSLOW	41	28	—	—	14

Table 5.--Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites

Number in figures 2-8	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		COASTAL RIVER BASINS OF THE NORTH SHORE					
1	01073860	Smallpox Brook at Salisbury, Mass.	Lafayette Road	1974-75	1.82	0.2	<0.1
		IPSWICH RIVER BASIN					
4	01101290	Ipswich River at Wilmington, Mass.	Burlington Road	1970-71	1.11	—	—
6	01101310	Ipswich River at Wildwood Street near Wilmington, Mass.	Wildwood Street	1970-71	8.22	—	—
7	01101320	Lubbers Brook at Main Street near Wilmington, Mass.	Main Street	1970-71	2.85	—	—
8	01101330	Lubbers Brook near Wilmington, Mass.	Concord Street	1970-71	5.53	—	—
9	01101340	Ipswich River near Wilmington, Mass.	Woburn Street	1970-71, 1978	14.3	—	—
10	01101350	Bear Meadow Brook near North Reading, Mass.	Haverhill Street	1971	4.41	—	—
11	01101390	Skug River near North Reading, Mass.	Central Street	1970-71	6.31	—	—
12	01101400	Martins Brook near North Reading, Mass.	Park Street	1970-71, 1978	13.3	—	—
13	01101450	Ipswich River at North Reading, Mass.	Central Street	1970-71	37.3	—	—
14	01101460	Ipswich River tributary at North Reading, Mass.	Willow Street	1970-71	2.01	—	—
15	01101480	Wills Brook near North Reading, Mass.	Railroad grade	1971	1.77	—	—
17	01101540	Ipswich River at Middleton, Mass.	State Route 62	1978	56.0	—	—
18	01101550	Emerson Brook near Middleton, Mass.	Mill Street	1970	6.31	—	—

Table 5.--Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		IPSWICH RIVER BASIN (Continued)					
19	01101600	Boston Brook at Essex Road near Middleton, Mass.	Essex Road	1970-71	5.04	—	—
20	01101650	Boston Brook at Liberty Road near Middleton, Mass.	Liberty Road	1970-71	8.24	—	—
21	01101700	Boston Brook near Middleton, Mass.	Peabody Street	1978	10.8	—	—
22	01101710	Ipswich River near Middleton, Mass.	Peabody Street	1978	74.1	—	—
23	01101720	Fish Brook near Boxford, Mass.	Brookview Road	1970	9.87	—	—
24	01101750	Fish Brook near Topsfield, Mass.	River Road	1970-71	17.5	—	—
25	01101755	Fish Brook at Endicott Road near Topsfield, Mass.	Endicott Road	1978	17.7	—	—
26	01101770	Ipswich River near Topsfield, Mass.	Rowley Bridge Road	1978	97.2	—	—
27	01101800	Ipswich River at Topsfield, Mass.	U.S. Route 1	1950, 1978	98.5	—	—
28	01101805	Ipswich River at High Street near Topsfield, Mass.	High Street	1978	100	—	—
29	01101850	Pye Brook near Topsfield, Mass.	Haverhill Street	1970-71	6.67	—	—
30	01101900	Howlett Brook near Topsfield, Mass.	Ipswich Road	1970-71, 1978	10.9	—	—
32	01102008	Ipswich River at Mill Road near Ipswich, Mass.	Mill Road	1978	130	—	—
33	01102010	Miles River at Hamilton, Mass.	Bridge Street	1971	—	—	—
34	01102015	Miles River near Ipswich, Mass.	State Route 1A	1970-71, 1978	16.8	—	—

Table 5.--Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		COASTAL RIVER BASINS OF THE NORTH SHORE					
35	01102020	Walker Creek tributary near Gloucester, Mass.	Sumner Street	1974	—	--	0.0
36	01102022	Essex Bay tributary near Gloucester, Mass.	Concord Street	1974	—	—	.0
37	01102025	Jones River near Gloucester, Mass.	Concord Street	1974	—	--	.0
		COASTAL RIVER BASINS OF MASSACHUSETTS BAY					
38	01102030	Mill Brook at Rockport, Mass.	Granite Street	1974	—	—	.0
39	01102035	Freshwater Cove tributary near Gloucester, Mass.	Approach road to Dolliver Neck	1974	—	—	.0
40	01102040	Plum Cove tributary near Beverly, Mass.	State Route 127	1974	—	—	.0
41	01102050	Beaver Brook at Danvers, Mass.	Pickering Street	1959-60	1.87	—	—
42	01102055	Porter River tributary at Danvers, Mass.	State Route 35	1974	.35	—	.0
43	01102060	Bass River at Beverly, Mass.	Marine Corps Golf Course	1959	1.38	—	—
44	01102150	Forest River tributary near Salem, Mass.	Swampscott Road	1974	--	—	.0
45	01102160	Dolliber Cove tributary at Marblehead, Mass.	Beacon Street	1974	—	—	.0
46	01102190	Breeds Pond tributary near Lynn, Mass.	Waycross Road	1974	—	—	.0
47	01102200	[1]Breeds Pond at Lynn, Mass.		1971	—	—	—
48	01102170	Cedar Brook near Lynn, Mass.	Tuscan Road	1974	—	—	.0
49	01102300	Beaverdam Brook at Lynnfield Center, Mass.	Main Street	1974	—	—	.0
50	01102320	Saugus River tributary at Lynnfield Center, Mass.	Forest Hill Ave.	1974	—	—	.0
51	01102340	Mill River tributary at Wakefield, Mass.	Preston Street	1974	—	—	.0

Table 5.—Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		MYSTIC RIVER BASIN					
52	01102430	Aberjona River at Reading, Mass.	State Route 129	1967	—	—	--
53	01102435	Aberjona River above Commerce Way near Woburn, Mass.	300 feet upstream from Commerce Way	1973	—	—	—
54	01102440	Aberjona River below Commerce Way near Woburn, Mass.	100 feet downstream from Commerce Way	1973-74	—	—	--
55	01102445	Aberjona River tributary near Woburn, Mass.	1800 feet downstream from U.S. Route 93	1973	--	--	--
56	01102448	Willow Brook near Woburn, Mass.	Nichols Street	1974	0.53	—	--
57	01102450	Halls Brook near Woburn, Mass.	New Boston Street	1973-74	1.51	0.2	<0.1
58	01102455	Aberjona River at State Route 128 near Woburn, Mass.	State Route 128	1973-74	5.54	—	—
59	01102460	Aberjona River near Woburn, Mass.	Salem Street	1973-74	6.91	—	—
60	01102463	Aberjona River at Woburn, Mass.	Washington Circle	1967, 1973	8.50	—	—
61	01102465	Aberjona River at Montvale Avenue near Woburn, Mass.	Montvale Avenue	1973-75	8.93	1.2	.4
62	01102470	Sweetwater Brook at Stoneham, Mass.	Maple Street	1973-74	2.09	<.1	.0
63	01102474	Aberjona River near Winchester, Mass.	Washington Street	1967, 1973-74	*11.9	1.2	.4
64	01102480	Aberjona River at Swanton Street at Winchester, Mass.	20 feet upstream from Swanton Street	1973-75	*13.4	.9	.3
65	01102482	Little Brook near Woburn, Mass.	Bedford Road	1974	—	—	—
66	01102485	Cummings Brook near Woburn, Mass.	Lexington Street	1973-74	3.33	.4	.2

Table 5.--Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		MYSTIC RIVER BASIN (Continued)					
67	01102490	Shaker Glen Brook near Woburn, Mass.	Lexington Street	1973-74	2.66	0.4	0.2
68	01102493	Horn Pond Brook at Canal Street at Winchester, Mass.	Canal Street	1973-74	—	—	—
69	01102495	Horn Pond Brook at Winchester Mass.	Outlet of Wedge Pond	1973-74	—	—	—
72	01103005	Mill Brook near Lexington, Mass.	Massachusetts Avenue	1974	—	—	—
73	01103014	Mill Brook at Arlington, Mass.	1200 feet upstream from mouth	1973-74	5.21	.6	.3
74	01103020	[1]Fresh Pond at Cambridge, Mass.		1971	—	—	—
75	01103025	Alewife Brook near Arlington, Mass.	Broadway	1973-74	—	—	—
76	01103030	Mystic River near Medford, Mass.	Boston Avenue	1974	—	—	—
77	01103038	Malden River at Malden, Mass.	Centre Street	1973-74	—	—	—
78	01103050	[1]Mystic River at Amelia Earhart Dam, at Somerville, Mass.	Dam	1973	62.7	—	—
		CHARLES RIVER BASIN					
79	01103090	[1]Echo Lake tributary near Hopkinton, Mass.	Granite Street	1970	.31	—	—
80	01103100	[2]Charles River near Milford, Mass.	State Route 85	1967-70	1.59	—	—
81	01103120	[2]Charles River at Milford, Mass.	State Route 16	1967	8.28	—	—
82	01103150	Charles River tributary at Bellingham, Mass.	State Route 140	1968-70	.62	<.1	.0
83	01103200	[2]Charles River below Box Pond at Bellingham, Mass.	Depot Street	1967,69, 1970,82	14.5	2.1	.9

Table 5.--Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		CHARLES RIVER BASIN (Continued)					
84	01103205	[1]Beaver Brook tributary at Bellingham, Mass.	Caroline Drive	1970	—	—	—
85	01103206	[2]Charles River at North Bellingham, Mass.	200 feet downstream from Maple Street	1982	—	—	—
86	01103210	Stall Brook at North Bellingham, Mass.	State Route 126	1968-71	3.76	0.2	<0.1
87	01103214	Beaver Brook near Holliston, Mass.	Marshall Street	1968-71	1.96	.0	.0
88	01103217	Hopping Brook near West Medway, Mass.	West Street	1968-71	10.1	—	—
89	01103220	Miscoe Brook near Franklin, Mass.	South Street	1968-71	1.15	.1	<.1
90	01103225	Miscoe Brook at Washington Street near Franklin, Mass.	Washington Street	1968-71	2.14	.1	<.1
91	01103229	Mine Brook 1.5 miles west, near Franklin, Mass.	Grove Street	1967	--	—	—
92	01103230	Dix Brook near Franklin, Mass.	Vine Street	1968-71	.23	<.1	.0
93	01103235	[2]Mine Brook 2 miles southwest, near Franklin, Mass.	Grove Street	1967	9.85	—	—
94	01103240	[2]Mine Brook near Franklin, Mass.	Pond Street	1968-70	14.2	3.2	1.6
95	01103250	Chicken Brook at Holliston, Mass.	Private road 400 feet east of State Route 16	1968-71	2.16	.2	<.1
96	01103252	Chicken Brook at Park Pond outlet, at West Medway, Mass.	200 feet downstream from Park Pond outlet	1967	—	—	--
97	01103253	[2]Chicken Brook near West Medway, Mass.	Cottage Street	1968-71	7.22	.5	.3

Table 5.--Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		CHARLES RIVER BASIN (Continued)					
98	01103260	[2]Charles River at West Medway, Mass.	Shaw Street	1968-71, 1982	60.3	8.5	3.8
99	01103270	Shepards Brook tributary near Franklin, Mass.	Lincoln Street	1968-71	1.05	<.1	.0
100	01103273	Shepards Brook near Franklin, Mass.	Lincoln Street	1968-71	2.10	.1	<.1
101	01103290	Safe Meadow Brook near Wrentham, Mass.	Whiting Street	1968-71	.73	.2	<.1
102	01103292	Eagle Brook near Wrentham, Mass.	State Route 140	1967	—	—	—
103	01103299	Mill River at City Mills, Mass.	600 feet downstream from City Mills Pond outlet	1967	—	—	—
104	01103300	[2]Mill River near Norfolk, Mass.	Miller Street	1968-71	13.8	6.4	3.9
105	01103303	Cress Brook near Norfolk, Mass.	Myrtle Street	1968-70	1.54	.7	.6
107	01103308	Stop River tributary No. 3 near Wrentham, Mass.	200 feet east of North Street	1971	—	—	—
108	01103310	[2]Stony Brook near Norfolk, Mass.	Diamond Street	1968-69	1.46	1.2	.9
109	01103320	Stop River tributary at Norfolk, Mass.	Boardman Street	1968-71	.76	.2	.1
110	01103330	[2]Stop River near Medfield, Mass.	South Street	1967-71	12.8	3.0	2.6
111	01103335	Stop River tributary No. 2 near Medfield, Mass.	Indian Hill Road	1968-71	.71	.0	.0
112	01103340	Charles River at Medfield, Mass.	0.5 mile upstream from State Route 109	1982	107	—	—
113	01103350	Vine Brook at Medfield, Mass.	North Street	1968-71	.94	.2	.1
114	01103355	Charles River tributary No. 2 at Millis, Mass.	Island Street	1971	—	—	—

Table 5.--Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		CHARLES RIVER BASIN (Continued)					
115	01103360	Mill Brook near Medfield, Mass.	Farm Street	1968-69	2.12	--	--
116	01103370	Jar Brook near Holliston, Mass.	Winter Street	1968-71	.62	0.0	0.0
117	01103380	[1]Winthrop Canal at Holliston, Mass.	Elm Street	1970	2.35	--	--
118	01103390	[2]Bogastow Brook near Millis, Mass.	Orchard Street	1968-71	13.0	1.3	.5
119	01103395	[2]Bogastow Brook at Orchard Street near Millis, Mass.	Orchard Street downstream from Bogastow Pond	1967	23.4	--	--
120	01103400	[2]Charles River near Medfield, Mass.	State Route 27	1969-70, 1982	141	25	12
121	01103405	Sewall Brook near Sherborn, Mass.	Forest Street	1968-71	2.58	<.1	.0
122	01103415	Indian Brook near Sherborn, Mass.	Everett Street	1970	--	--	--
123	01103420	Charles River at Natick, Mass.	50 feet downstream from dam	1982	156	--	--
124	01103425	Bogle Brook tributary near Weston, Mass.	State Route 30	1968-71	.83	.1	<.1
125	01103430	Boulder Brook near Wellesley, Mass.	Weston Street	1968-71	.90	.1	<.1
126	01103440	Fuller Brook at Wellesley, Mass.	Brook Street	1959-60, 1968-71	3.93	.4	.1
127	01103450	Trout Brook tributary at Dover, Mass.	Springdale Avenue	1968-71	.63	.5	.3
128	01103455	Trout Brook at Dover, Mass.	Haven Street	1968-71	3.72	1.4	.8
129	01103480	Noanet Brook near Dover, Mass.	Dedham Street	1968-71	1.91	.2	<.1
131	01103700	Rock Meadow Brook at Westwood, Mass.	Dover Street	1970	1.01	--	--
132	01103905	Charles River at State Route 128 at Dedham, Mass.	State Route 128	1982	192	--	--

Table 5.--Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		CHARLES RIVER BASIN (Continued)					
133	01103980	Charles River at Dedham, Mass.	Ames Street	1944-45	--	--	--
134	01103990	Lowder Brook at Dedham, Mass.	U.S. Route 1	1971	4.04	--	--
136	01104050	Sawmill Brook near West Roxbury, Mass.	Baker Street	1968-71	1.97	0.5	0.1
137	01104055	[1]Sawmill Brook at mouth, near West Roxbury, Mass.	Mouth	1970	--	--	--
138	01104100	South Meadow Brook at Newton, Mass.	Parker Street	1970	--	--	--
140	01104250	Rosemary Brook at Wellesley, Mass.	Wellesley Avenue	1970	--	--	--
141	01104255	Rosemary Brook near Wellesley, Mass.	Oakland Street	1967	--	--	--
142	01104300	[2]Stony Brook near Weston, Mass.	Merriam Street	1968-71	5.64	.2	<.1
143	01104350	Cherry Brook near Weston, Mass.	Conant Road	1968-71	2.13	.4	.2
144	01104395	Hobbs Brook tributary near Lincoln, Mass.	Concord Turnpike	1970	--	--	--
145	01104400	Hobbs Brook near Lincoln, Mass.	Abandoned road 750 feet north of Concord Turnpike	1969-71	1.31	.0	.0
146	01104450	[1]Stony Brook at Waltham, Mass.	Railroad at Waltham city boundary	1970	--	--	--
		NEPONSET RIVER BASIN					
149	01104800	Neponset River near Foxborough, Mass.	North Street	1967	1.92	--	--
150	01104820	Neponset River near South Walpole, Mass.	South Street	1967	7.62	--	--
151	01104830	[3]School Meadow Brook near Walpole, Mass.	Washington Street	1966-67	2.80	--	--

Table 5.--Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		NEPONSET RIVER BASIN (Continued)					
152	01104840	Neponset River at Walpole, Mass.	Main Street	1967-68	11.5	—	--
153	01104847	Mine Brook near Medfield, Mass.	Philip Street	1967-69	3.56	0.4	0.2
155	01104860	Spring Brook at Walpole, Mass.	200 feet downstream from Memorial Pond outlet	1966-67	1.84	.8	.5
156	01104880	Neponset River tributary near Walpole, Mass.	Gould Street	1966-67	1.52	.0	.0
157	01104890	Neponset River at East Walpole, Mass.	Washington Street	1967	—	—	—
159	01104905	Mill Brook near Westwood, Mass.	500 feet upstream from Pettee Pond inlet	1966-68	2.27	.5	.2
160	01104910	Bubbling Brook at North Street, near Westwood, Mass.	North Street	1966-68	.19	<.1	.0
161	01104915	Bubbling Brook tributary near Walpole, Mass.	North Street	1966-68	.75	<.1	.0
162	01104916	Bubbling Brook near Westwood, Mass.	100 feet upstream from Pettee Pond inlet	1967-68	1.38	—	—
163	01104940	Willett Pond outlet near Norwood, Mass.	Willett Pond outlet	1966	4.88	—	—
164	01104960	Germany Brook near Norwood, Mass.	100 feet upstream from Nichols Street	1966-68	2.37	.2	.1
165	01104980	Hawes Brook at Norwood, Mass.	Washington Street	1967-68	8.63	—	—
167	01105100	Traphole Brook near Norwood, Mass.	Sumner Street	1959-60, 1966-68	3.40	1.1	.6
168	01105150	Neponset River tributary No. 2 near Sharon, Mass.	Edge Hill Road	1966-68	.39	.0	.0

Table 5.—Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		NEPONSET RIVER BASIN (Continued)					
169	01105200	Massapoag Brook at Sharon, Mass.	Ames Street	1967	4.23	—	—
170	01105250	Massapoag Brook near Sharon, Mass.	State Route 27	1966-67	6.31	—	—
171	01105255	Beaver Brook at Sharon, Mass.	Maskwonicut Street	1966-68	2.43	1.0	0.5
172	01105300	[3]Steep Hill Brook at Canton, Mass.	Bailey Street	1966-68	6.65	3.2	1.6
173	01105350	[3]Beaver Meadow Brook at Canton, Mass.	Pleasant Street	1966-67	2.45	.2	<.1
174	01105400	Pequid Brook near Canton, Mass.	State Route 138	1966-68	4.55	<.1	.0
175	01105450	Pequid Brook at Canton, Mass.	Pleasant Street	1966-67	6.22	—	—
177	01105525	Purgatory Brook at Islington, Mass.	State Route 1A	1959-60	1.27	—	—
178	01105530	Purgatory Brook near Norwood, Mass.	U.S. Route 1	1966-68	2.91	.3	.1
179	01105545	Plantingfield Brook at Washington Street at Norwood, Mass.	State Route 1A	1966-68	1.02	.0	.0
181	01105551	Neponset River at Canton, Mass.	Dedham Street	1968	82.2	—	—
182	01105552	[3]Pecunit Brook near Canton, Mass.	Elm Street	1966-68	.79	.0	.0
183	01105553	Ponkapoag Brook near Canton, Mass.	Elm Street	1966-68	3.76	1.5	.9
184	01105554	[1]Neponset River near Dedham, Mass.	Blue Hill Drive	1967	88.5	—	—
185	01105555	Neponset River at Milton, Mass.	Neponset Valley Parkway	1968	93.2	—	—
186	01105556	Neponset River at Hyde Park, Mass.	Tileston and Hollingsworth Company dam	1968	—	—	—

Table 5.--Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		WEYMOUTH FORE RIVER BASIN					
188	01105559	Norroway Brook at North Randolph, Mass.	Oak Street	1966-68	1.47	<0.1	<0.1
189	01105561	[3]Farm River near Braintree, Mass.	West Street	1966-67	—	—	—
190	01105562	[3]Farm River near South Braintree, Mass.	Pond Street	1967-68	9.97	.5	.2
191	01105564	Trout Brook 0.5 mile above Lake Holbrook near Holbrook, Mass.	0.5 mile upstream from Lake Holbrook inlet	1966-67	.93	—	—
192	01105565	[3]Trout Brook 0.2 mile above Lake Holbrook at Holbrook, Mass.	0.2 mile upstream from Lake Holbrook inlet	1966-67	1.11	<.1	.0
193	01105567	Unnamed tributary at Holbrook, Mass.	South Street	1966-67	.92	.0	.0
194	01105569	Mary Lee Brook at Randolph, Mass.	800 feet upstream from mouth	1967-68	1.36	.1	<.1
195	01105571	Glovers Brook at Randolph, Mass.	North Street	1966-68	2.61	.2	<.1
196	01105573	Tumbling Brook at Holbrook, Mass.	Center Street	1966-67	.89	—	.0
197	01105574	Cochato River at Braintree Highlands, Mass.	Railroad bridge 1300 feet off Washington Street	1966	10.4	—	—
198	01105575	Cranberry Brook at at Braintree Highlands, Mass.	Washington Street	1966-68	1.72	<.1	.0
199	01105578	Sunset Lake outlet at South Braintree, Mass.	Pond Street	1966-67	.50	—	—
200	01105580	[3]Monatiquot River at South Braintree, Mass.	Jefferson Street	1967-68	24.8	1.4	.5
201	01105582	[3]Monatiquot River at Braintree, Mass.	Middle Street	1967	27.6	2.1	.7

Table 5.—Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
		WEYMOUTH BACK RIVER BASIN					
203	01105590	[3]Mill River near South Weymouth, Mass.	Front Street	1966-67	5.76	0.1	<0.1
204	01105593	[3]Mill River near Weymouth, Mass.	Middle Street	1966-67	6.22	.0	.0
205	01105594	Old Swamp River at Rockland, Mass.	Forest Street	1967-68	.24	.0	.0
206	01105595	Old Swamp River near Hingham, Mass.	Sharp Street	1967-68	1.33	.0	<.1
207	01105596	Old Swamp River at South Weymouth, Mass.	Ralph Talbot Street	1967-68	3.43	.2	<.1
208	01105597	Old Swamp River below Pine Street at South Weymouth, Mass.	Pine Street	1959-60	3.74	—	—
209	01105598	Old Swamp River at Pleasant Street near South Weymouth, Mass.	Pleasant Street	1966-67	3.83	—	—
211	01105609	Whitmans Pond outlet tributary at East Weymouth, Mass.	Water Street	1966	—	—	—
212	01105610	Whitmans Pond outlet at East Weymouth, Mass.	Pleasant Street	1966-67	12.6	—	—
213	01105614	Whitmans Pond outlet tributary No. 2 at East Weymouth, Mass.	Broad Street	1966-68	.37	.0	.0
214	01105617	Fresh River near Hingham, Mass.	Commercial St.	1966-68	.94	.3	.2

Table 5.--Summary of 7-day low-flow characteristics, drainage area, and period of record for low-flow partial-record stations and miscellaneous sites (Continued)

Number in figures 2-8	Station number	Station name	Location	Period of record	Drainage area, in square miles	Estimated annual minimum 7-day mean low flow, in cubic feet per second, at indicated recurrence interval	
						2-year	10-year
			WEIR RIVER BASIN				
215	01105627	Plymouth River near East Weymouth, Mass.	Plymouth River Road bridge	1959-60	2.97	--	--
216	01105630	Crooked Meadow River near Hingham Center, Mass.	Main Street	1969-71	4.90	0.6	0.2
217	01105635	[4]Accord Brook near Hingham, Mass.	0.9 mile downstream from Prospect Street bridge	1970-71	3.76	.1	.0
218	01105640	[4]Weir River near Hingham, Mass.	Macadam road	1969-71	14.6	.9	.3

*Excludes 0.63 mi^2 drained by Winchester's North Reservoir.

[1] Water-quality sample.

[2] Possible regulation or diversion within basin.

[3] Ground-water pumpage within basin.

[4] Flow affected diversion.

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